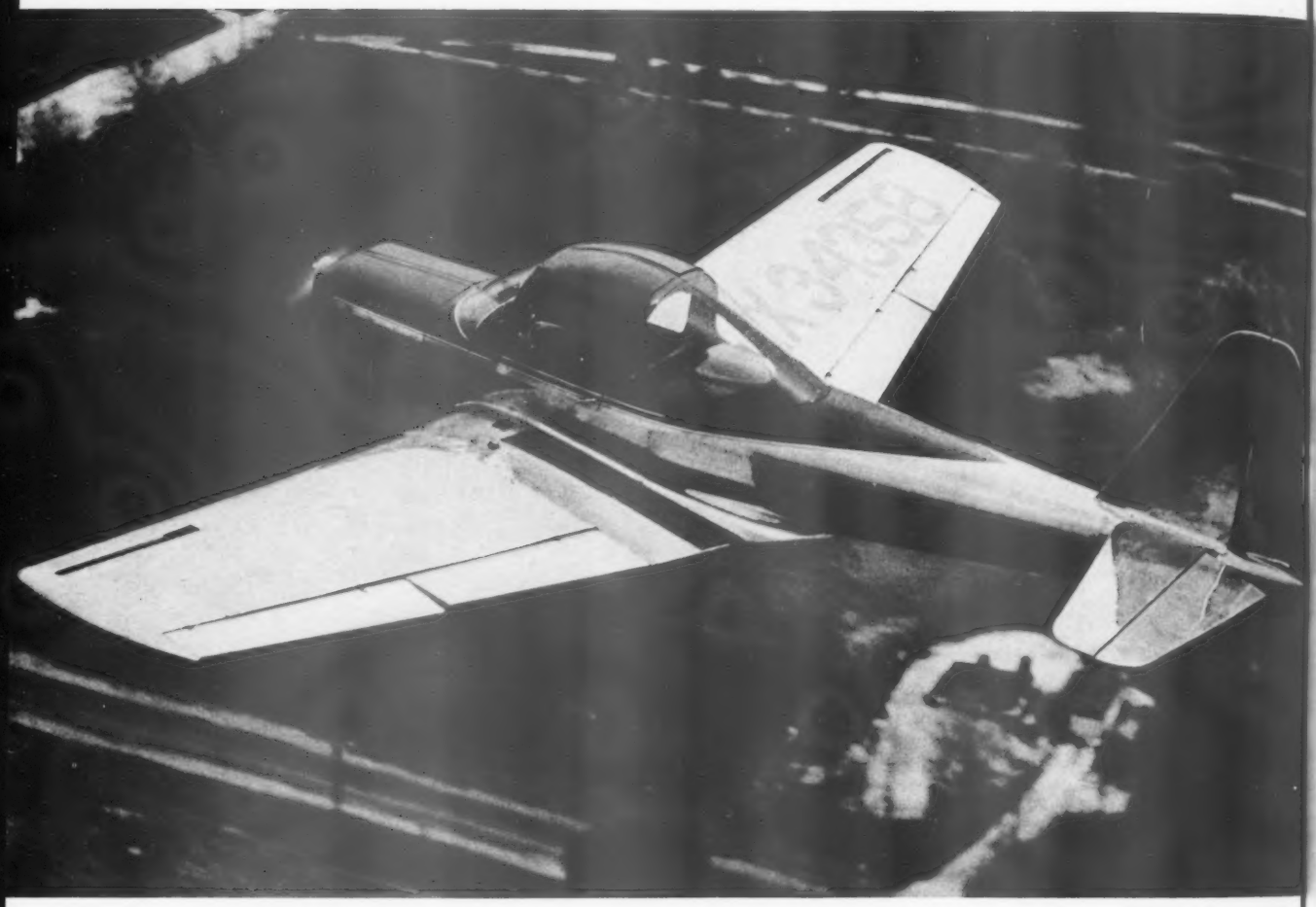
FLYING
SEPTEMBER
1946
25¢
In Canada 30¢
UNIVERSITY OF MISSOURI
JUL 24 1947
THE ARMY'S CIVILIAN AIR FORCE
PAGE 17
I FLEW 'THE WING'
PAGE 34

We proudly present... the new Meyers



"A plane to delight the heart of every sportsman pilot". . . . .
two place all metal . . . . . powered with 125 H. P.
Continental . . . . . retractable landing gear . . . . .
roomy side by side cabin with real 360° visibility
. . . . . quick takeoff and slow landing land speed whether you
fly at sea level or high altitude . . . . . a
cruising speed of 120 plus . . . . . high speed 140 M.P.H.
. . . . . the postwar plane you've been promised.

MEYERS AIRCRAFT CO., TECUMSEH, MICHIGAN

It lands on both water and solid runways

THE CAREFREE OWNER of a new Republic Seabee will splash into the water without ever thinking of his brakes. For they're specially made by B. F. Goodrich to withstand the corrosion of water landings. Later, he will appreciate their smooth performance, whether he's landing on a runway or taxiing cross wind.

With the famous B. F. Goodrich Low Pressure Silvertowns, this landing gear combination gives the Seabee owner assurance of more and safer landings on solid runways, too. The principle of low-pressure airplane tires, first developed by B. F. Goodrich, permits a larger air volume, lower inflation pressures, and greater footprint.

With this combination there's practically no maintenance. And most of that is easier than puttering with automobile tires.

For further facts about B. F. Goodrich tires and brakes, or about any of more than eighty B. F. Goodrich products for planes, write to *The B. F. Goodrich Co., Aeronautical Division, Akron, Ohio.*

B.F.Goodrich

FIRST IN RUBBER

FLYING

Reg. U. S. Pat. Off.

SEPTEMBER • 1946

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THE COVER

These are three of the first post-war Widgeons produced by Grumman. This model differs only slightly from the prewar version. It has a redesigned and slightly longer hull and the interior has been modernized. The Widgeon is a favorite of rich sportsmen-pilots and of industrial concerns that can use an amphibian for business flights.

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WHATTA PEACH— SHE'S A BEECH!

Say, you'll be up in the air in more ways than one when that new Beech of yours goes humming down the runway!

If you're one of those modern-minded executives who knows that an airplane is good business, we're all for you. For our business is doing business with folks like you.

So—wherever you fly in the great Middle West, you'll find fields displaying the Orange-and-Black "66" Shield. That "66" stands for the finest possible in aircraft fuels and lubricants. They've been developed and distributed by one of America's most air-minded companies, for an ever-growing air-minded public. The Aviation Department, Phillips Petroleum Company, Bartlesville, Okla.

Phillips 66

AVIATION GASOLINE

He Flew C-87's Over the Hump...

CAPTAIN ROBERT BAKER

American war ace—now Captain for American Airlines—says . . .

"When you're peak-skimming the hump at 16,000 or flying over miles of ocean, you've got to have the best. Our plane got us through—or maybe I should say 'over'—every time. We sweated through 58 missions over the hump and 83 missions across the ocean—continent to continent.

"Well, when I got into civvies and went on the prowl for a personal plane to use on vacations and on short hops to visit friends, I wasn't settling for anything but the best either."

And Aeronca's plenty proud to report that the Captain gave the nod to the Champion. Yes, he knows his planes, he knows his flying, and *he chooses Aeronca over all others!*

That's because the Aeronca Champion does offer so much more. Of all low-priced planes, only Aeronca Champion gives you 300° visibility. Lower cowling and wide, one-piece plexiglas windshield mean unhampered vision on take-offs, landings and in the air – hailed by pilots everywhere as today's greatest contribution to safety! Thanks to Oleo landing gear and low 38 mph. landing speed you can land smoothly "almost anywhere". A small field does the job.

There's new ease of handling in the air . . . new luxury within. Wide automobile-type door and handy step provide easy access. Big upholstered, lounge-type seats give you comfortable, relaxed flying.

See Aeronca—fly it—compare it with any other low-cost plane, and you too will agree with Captain Baker, who says—

"Yes, sir, from any angle – it's Aeronca for me!"

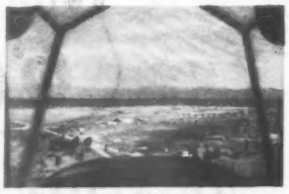
"EASY AS DRIVING A CAR"

says Vivian Cadman, former WASP—now Stewardess for American Airlines

NO STRANGER to airplanes, Miss Cadman (pictured with Captain Baker in Champion's roomy cabin) flew P-40's, P-47's and P-51's before joining American. In personal planes she says, "Aeronca suits me to a T".

READY FOR A HOP. Miss Cadman enters through the wide, automobile-type door. Handy step makes for easy access.

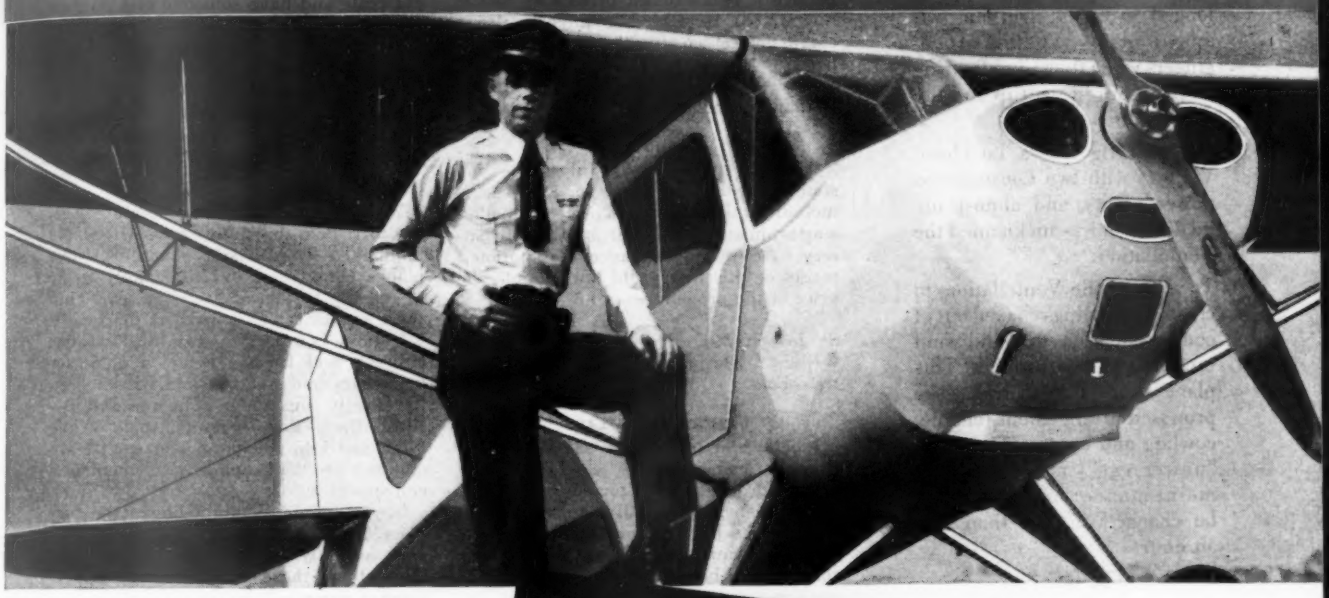
SHE'S OFF! With Aeronca's new, faster climb Champion gets off ground fast . . . clears close-to-field obstacles easily.



NO OTHER LOW-COST PLANE GIVES AERONCA'S 300° VISIBILITY –hailed as today's greatest contribution to safety!

AERONCA'S OLEO HEAVY-DUTY LANDING GEAR means smoother, happier landings, saves wear and tear on plane.

Today— HE FLIES AERONCA!



CAPTAIN BAKER STANDING BY THE CHAMPION

He's all set for a pleasure hop. When off duty from his regular job of flying giant American Airlines' Flagships, Captain Baker finds great relaxation in flying Aeronca . . . on hunting and fishing trips and to visit friends in near-by cities. "No other low-cost plane", he says, "gives me such economical, trouble-free flying!"

Both the Aeronca Champion (Tandem) and the Chief (Side-by-side model) are in full production and are being delivered!

So Safe—So Simple—Now

ANYBODY CAN FLY AERONCA

SPECIFICATIONS OF THE AERONCA CHAMPION

Wing Span	35 Feet	Useful Load	510 Lbs.
Length	21 Feet, 6 Inches	Gross Weight	1220 Lbs.
Wing Area	170 Sq. Ft.	Top Speed	100 mph.
Wing Loading	7.2 Lbs. Per Sq. Ft.	Cruising Speed	90 mph.
Power Loading	18.8 Lbs. per Horsepower	Landing Speed	38 mph.
Power Plant	65 Horsepower motor	Rate of Climb	500 Ft. per Min.
Fuel Capacity	13 gallons	Cruising Range	270 miles

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Over 1000 Aeronca qualified dealers to serve you at handy airports all over the U. S. A.

AERONCA

America's No. 1 Low Cost Plane

HANGAR FLYING

LOCKHEED

The Air-Going Bench

A weird flying test bench, with a name that sounds as if it belonged to an electric fan, was spawned by Lockheed engineers when they were figuring out the engine setup for the *Constellation*.

The test rig was a Lockheed Ventura with two *Constellation* power plants, and almost immediately it was nicknamed the Ventellation.

They used the Ventellation to check the findings coaxed out of conventional, earthbound wind tunnels and test benches. This plane showed them that their proposed arrangement (engine, cowling and accessories in one "power egg") made for easy maintenance: an engine can be changed in less than half an hour.

It also pointed up the economy and double safety of oversize engines. As every well-behaved engineer knows, small engines, running all-out, use up more fuel and get more wear and tear than large engines cruising at loafing power.

Result: The *Constellation* has 4000 reserve horsepower and can climb on any two of its four engines.

It's this kind of serious funny-business at Lockheed that makes better planes worth talking about.

L to L for L

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LETTERS

OLDEST AIRPORT?

Bethany (Conn.) Airport has been operating since 1918. It has been owned by Harris Whittemore, Jr. since 1923. We believe it is the oldest private airport in the United States. Has anyone else a claim before we put this on our letterhead?

ROBERT H. HALPIN

Bethany, Conn.

WRONG PRICE

On page 106 in your July issue you stated that the *Swift* sells for $3,495 f.a.f., including the constant-speed propeller, starter, heater, generator and 12-volt battery. According to a recent quotation I received, this figure did not include the price of the propeller.

A. P. LANCASTER

St. Joseph, Mo.

● Right. The propeller is about $300 extra.—ED.

CHOCKING A PLANE

I believe a plane is a safe means of transportation if handled correctly in the air and properly cared for on the ground. Many planes, especially light aircraft, have had to have minor and some major repairs because they were improperly chocked and blown into another plane on the line.

Why don't you show the proper way to chock a plane in gusty and cross winds?

DANNIE D. LEIDECKER

San Diego, Calif.

● According to insurance experts, an aircraft should have its main wheels chocked front and rear. The tail wheel should be lined up fore and aft and locked in that position. It too should be chocked. Each wing should be tied down by a rope extending ahead of and 45° outward from the center line of the wing. The tail should be tied down by two ropes, one on each side, extending to the rear and 45° outward from the center line of the fuselage. In addition, the controls should be lashed in neutral and spoilers should be attached to the wings covering about half their span.—ED.

TESTING GCA

I read with interest your "Report from Washington" (FLYING, May, 1946) since at present GCA is our baby.

We have been making exhaustive tests with GCA at Indianapolis Municipal Airport in co-operation with the CAA. I agree with you that it takes quite a few trained personnel to operate GCA but the results have been encouraging. Runs have been made to compare it with the SCS-51 approach, commonly known as localizer glide-path approach.

You stated that the SCS-51 is okay for the airline pilot whereas GCA is comparatively simple for the layman. For my money, I'll take GCA every time. Without a doubt it is the most wonderful equipment produced so far for making a letdown. It's a lot easier to just fly the old crate and have someone else do your thinking than to try to remember which way to turn when the localizer needle goes right or left and you're trying to keep it vertically centered, plus thinking about gear, flaps, glidepath, etc.

WALTER A. POWELL

Indianapolis, Ind.

THE PILOT'S WIFE

When are lightplane manufacturers going to realize that pilots have wives and families? They spout about post-war planes being used by "the family to fly to resorts, to the city to shop, etc.," but these planes can't be used by the *family*.

I know, because we—my husband, two children and I have owned a plane for five years and in that time I have been up exactly four times. The reason? Because there aren't enough seats. While Mom and Pop fly about, you can't leave children on the ground or tie them to a convenient tree.

Buy a larger plane? Who, in the first place, can afford the purchasing price, and secondly, who can maintain one, other than those families with upper-bracket incomes?

At the moment I can name three men who would buy a plane at once but their wives have said "No!" because there is no room for the *family* in the plane priced at a figure they can afford. A wife can't see spending all that money just to fly around an airport, land and pick up one member of the family at a time and give them a "brief joyride."

If the lightplane builders want to sell their product to the average family, it will have to be at a price the family can afford. My discussions with pilots' wives indicate that the top price they can afford is around $1,500. Since airports are generally in out-of-the-way places, a car is also essential.

Let plane manufacturers be guided by the automobile industry's experience—as prices went down, the sales volume went up. And until they start building planes that appeal to the wives, they will have trouble selling them to the husbands.

IRENE MOORE

Baltimore, Md.

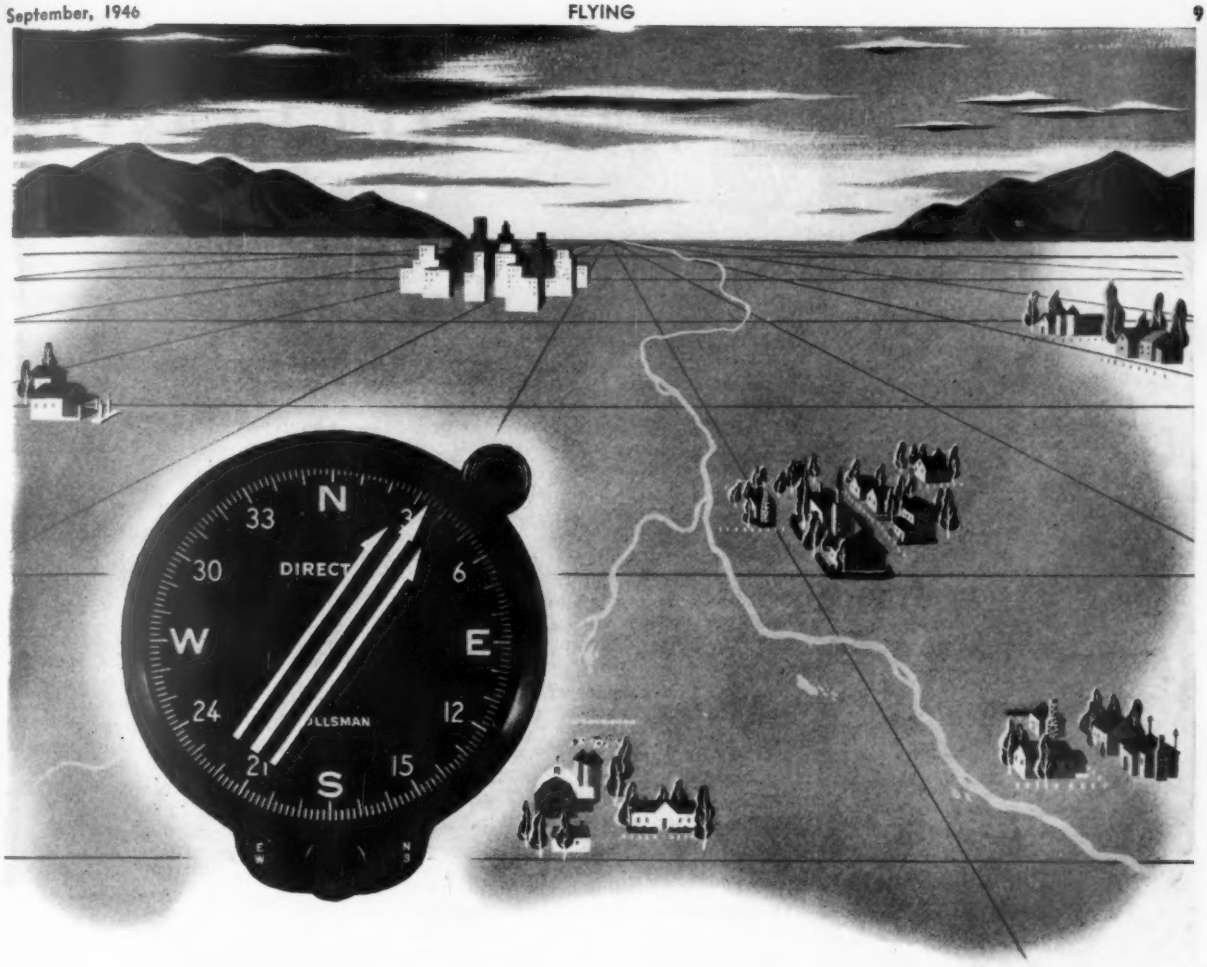
● Nearly all personal-plane manufacturers now realize that Reader Moore is correct. Many "family" planes can be expected on the market.—ED.

NEEDS RECOGNITION MATERIAL

I wonder if there is anyone who would be kind enough to send me any unwanted aircraft recognition material.

I am an aircraft recognition instructor

(*Continued on page* 100)



The Kollsman Direction Indicator ...the compass that works with you!

The Kollsman Direction Indicator — widely used in private planes and in an increasing number of scheduled airline operations — is regarded by many pilots as one of the greatest aids to the ease, enjoyment and safety of cross-country flying.

The 360° compass rose dial is similar in appearance to the rose on all aviation charts. With the compass pointer continually showing the course being flown and the auxiliary "memo" pointer set to the course desired, you are given a continuous "picture" of your flight.

The performance of the direct-reading Kollsman Direction Indicator is another big reason for its popularity. The pointer moves quickly to a new heading and remains "steady," without oscillation or appreciable overswing — the result of a unique vane dampener construction which is a special feature of this Kollsman unit.

To the more advanced pilot the Direction Indicator offers special advantages. For "approach procedures," for instance, the relationship between other headings and the runway designated for landing is instantly apparent. "Reciprocal" headings and relationship to other beams can be quickly seen and the possibility of error greatly reduced.

For an illustrated folder giving complete details, write Kollsman Instrument Division, Square D Company, 80-08 45th Avenue, Elmhurst, New York.

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HAVE YOU HEARD?

. . . **Aircraft industry net profits** stood at the bottom of a list of 30 industrial groups in a recent National City Bank Report. During 1945, it showed a 1.2 per cent net profit, after taxes, while chemical products manufacturers realized profits of 7.4 per cent, truck manufacturers 4.5 per cent and beverage producers 3.6 per cent.

. . . **Ten miles of electrical wiring** in Northrop's XB-35 Flying Wing (see page 34) link its four engine-driven alternators to the lights, radio, and to dozens of electric motors which actuate the gun turrets, landing-gear doors, bomb-bay doors, landing gears and other electrically-operated equipment.

. . . **The first race horses to be flown coast to coast** arrived in California aboard an American Air Express cargo carrier 16 hours after leaving New York. And 48 hours later they were running at Hollywood Park. Their DC-3 transport was equipped with tandem-box stalls.

. . . **Low-cost landing gears** for medium and light planes are being manufactured by Electrol, Inc., Kingston., N. Y. The new gears feature light weight, simplification and interchangeability of parts. One model is standard equipment on Republic's *Seabee*, another is being used on the Commonwealth *Trimmer*.

. . . **C-97 transports will carry many experimental AAF planes** to Army testing grounds, according to Gen. Lawrence C. Craigie, chief of the engineering division of the AAF Materiel Command. Transporting new planes by air saves considerable time and eliminates the danger of flying experimental planes on long flights to the testing grounds.

. . . **Nylon wing covers for planes** that must be tied down in the open have been designed by Bogardus Brothers, New Rochelle, N. Y. The covers have a built-in lift "spoiler" to protect the plane in high winds. The complete covering can be handled by one person and rolls into a compact bundle which can be stored conveniently in the plane.

. . . **The average lightplane purchaser** will be the same person who buys average-priced automobiles, Aeronca Aircraft Corp. has concluded from a country-wide survey among its dealers and distributors. The survey showed that 40 per cent of buyers and potential buyers were in the average middle class. Another 40 per cent were equally split between professional people and business-industrial leaders, with the remaining portion made up of independently wealthy persons. Some other survey facts: 55 per cent of prospects already know how to fly; 27 per cent are ex-service men; only three per cent of the entire number are women.

. . . **Country-fresh air for passengers in flight** is provided by chlorophyll air freshener devices now installed in Western Air Lines planes. The chlorophyll substance is vaporized into the cabin through the plane's ventilating system and eliminates food, tobacco and other odors which might be intensified in pressurized cabins.

. . . **A bird-proof windshield** to meet new CAA requirements has been developed for the twin-engined Beechcraft by the Pittsburgh Plate Glass Co. Made of two layers of semi-tempered glass with a layer of vinyl plastic between, the windshield resisted the impact of birds fired at a speed of 225 m.p.h. The CAA used a 20-foot compressed-air cannon for tests. Birds fired at 160 m.p.h. caused no damage. The windshield shattered but held together in successive tests at 196, 225 and 250 m.p.h.

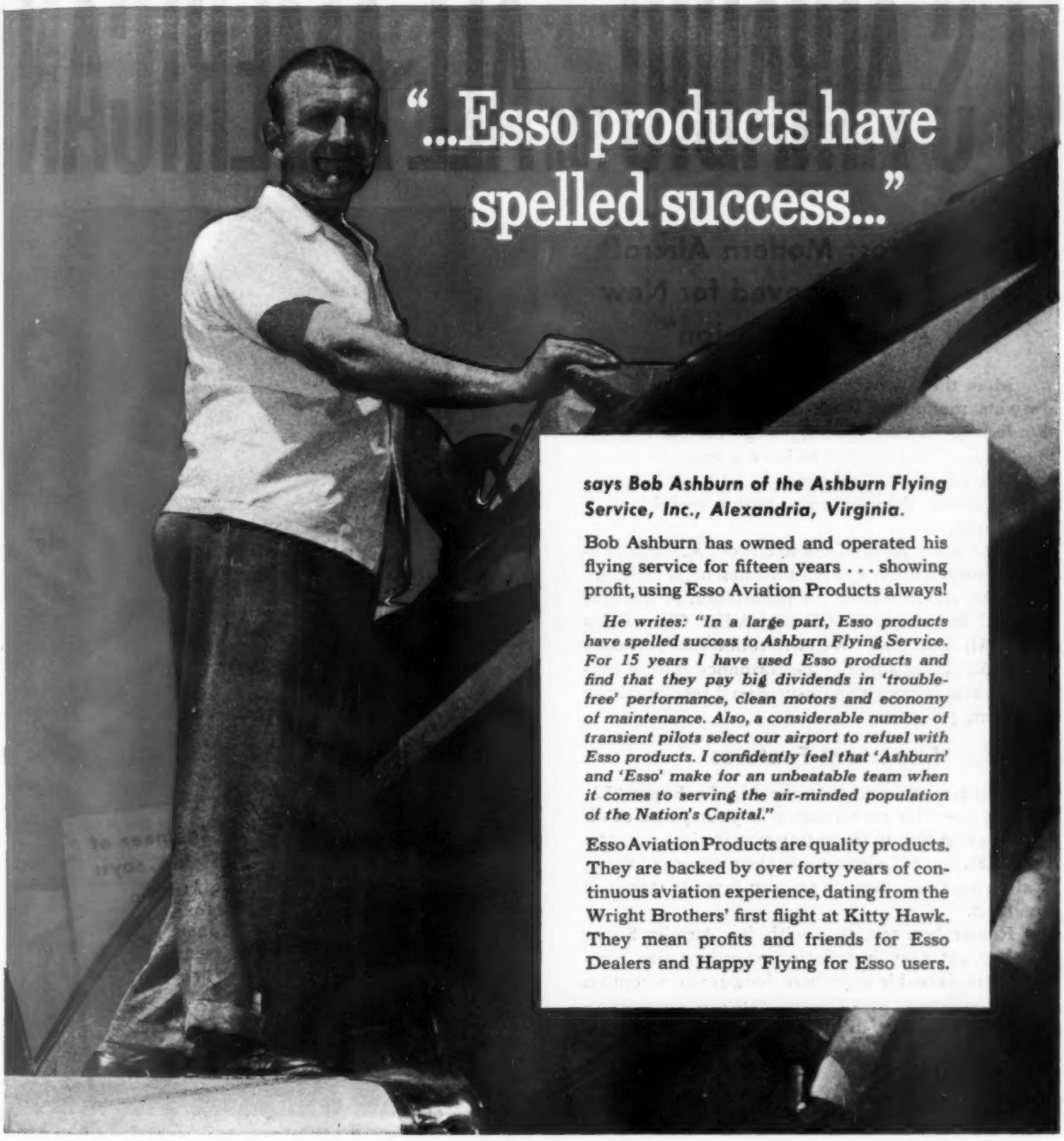
. . . **A 2,500-pound mobile "Chore Boy" ground unit** for quick servicing of *Constellations* has been designed by TWA engineers. It feeds carbon dioxide to the fire extinguishing equipment, refills the water tanks, and provides electrical power for the plane's engines. Powered with a gasoline engine, the mobile unit saves two men's time and eliminates two pieces of ramp equipment.

. . . **Piper Cubs are being shipped to Alaska** in DC-3s operated by Wallace Air Service, Spokane, Wash. Because of uncertainty of Alaskan steamship service, extra speed of delivery, and elimination of cost of heavy crating for ocean shipment, air deliveries of *Cubs* to the territory are considered practical.

. . . **It seemed "just like old times"** to Ex-Capt. Edmond Kelly when he accompanied a shipment in an Air Cargo Transport C-47, and discovered from the serial number that the plane was the same one he had flown for the Troop Carrier Command during the war.

. . . **Radar in air traffic control** has been developed to such a point at Wright Field that they can land 40 planes an hour under adverse weather conditions, a rate considerably higher than is possible under present-day commercial airline systems. Army officials expect to be able to land 60 planes an hour in the near future and are aiming at a goal of 300 an hour. END

NO. 8 IN THE SERIES, FEATURING SOME OF THE 700 ESSO AVIATION DEALERS THROUGHOUT 25 STATES



says Bob Ashburn of the Ashburn Flying Service, Inc., Alexandria, Virginia.

Bob Ashburn has owned and operated his flying service for fifteen years . . . showing profit, using Esso Aviation Products always!

He writes: "In a large part, Esso products have spelled success to Ashburn Flying Service. For 15 years I have used Esso products and find that they pay big dividends in 'trouble-free' performance, clean motors and economy of maintenance. Also, a considerable number of transient pilots select our airport to refuel with Esso products. I confidently feel that 'Ashburn' and 'Esso' make for an unbeatable team when it comes to serving the air-minded population of the Nation's Capital."

Esso Aviation Products are quality products. They are backed by over forty years of continuous aviation experience, dating from the Wright Brothers' first flight at Kitty Hawk. They mean profits and friends for Esso Dealers and Happy Flying for Esso users.

MR. AIRCRAFT OWNER: for ready reference, Esso Aviation Products are on sale at following airports in Maryland, Delaware, District of Columbia area:

DELAWARE: Bridgeville Airport; Sunglo Airport, Dover; U. S. Airplane Carriers, Inc., Dover; Bellanca Airport, New Castle; Biggs Airport, New Castle; Aircrafters, Inc., Rehoboth; McCabe Field, Selbyville; DuPont Airport, Wilmington. **MARYLAND:** Aldino Airport; Annapolis Flying Service, Inc.; Diffendall Airport, Baltimore; Knipp Airport, Baltimore; Capitol Airport, Inc., Berwyn; Queens Chapel Airport, Chillum; Crisfield Airport; Columbia Air Center, Croome; Mexico Farms Airport, Cumberland; Old Easton Airport, Easton; Lovett Airport, Elkton; Standard Air Service Corp., Glenburnie; Hagerstown Municipal Airport; Maryland Airport, Indian Head; Glenn L. Martin Co., Middle River; Stevens Airport, Inc., Lewistown; Oakland Airport; Erco Field, Riverdale; Rock Hall Airport; Congressional Airport, Rockville; Delmarva Airport, Salisbury; Civil Air Patrol Base #332, Westminster; Rutherford Field, Woodlawn. **VIRGINIA:** Alexandria Airport; Baileys Cross Roads Airport, Alexandria; Beacon Air Field, Alexandria; Cole's Field, McLean; Onancock Airport; Parksley Airport; Weirwood Airport. **WEST VIRGINIA:** Petersburg Airport; Romney Airport; Cumberland Municipal Airport, Wiley Ford.

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'World's Most Modern Aircraft Radio' Fully Approved for New All American "Ensign"

Meet the All American "Ensign," an all-metal, low-wing monoplane with a 360° range of vision afforded by its exceptionally large bubble canopy. The "Ensign" is expected to have a speed in excess of 120 m.p.h., a cruising speed of 110 m.p.h., and a range of better than 400 miles with a useful load of 550 pounds.

Now meet Airadio's new Super "52," the two-way communication system that has been fully approved by All American for installation in the new "Ensign." In the words of Ernest Adler, Chief Engineer of All American, "We have found that Airadio's Super "52" gives superior performance during normal use, and it has given unsurpassed results during our testing program."

Important Features

You too will find that the Airadio Super "52" will give superior performance in your plane at all times. In addition to the safety that it gives you, the Airadio Super "52" also adds to the pleasure of flying by allowing you to tune in on your favorite standard broadcast.

Remember, too, that with the Airadio Super "52" you get easy installation, standard size components replaceable anywhere, long-range reception and transmission, plus the assurance of uncompromising quality built in by Airadio's pilot-engineers.

Ernest Adler, Chief Engineer of All American Aircraft, Inc., says:

"We have found that Airadio gives superior performance during normal use, and it has given unsurpassed results during our testing program."

Chief Engineer Ernest Adler
All American Aircraft, Inc.

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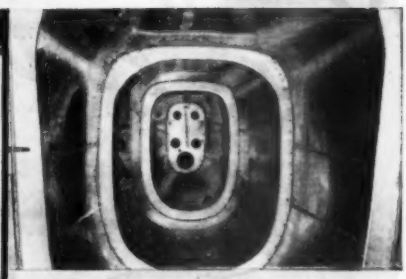
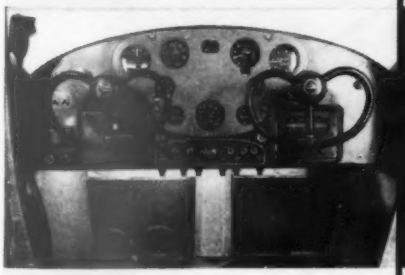
FEATURE FOR FEATURE...COMPARISON PROVES THAT CESSNA GIVES YOU *More for your Money*

Approaches To Short Fields are easier and safer in the Cessna 140. The flaps can be quickly set in any desired position throughout the entire range... at a touch of the conveniently placed finger-tip control.

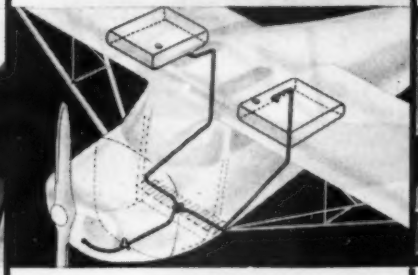
Geared For Safety. The Cessna's patented, safety landing gear effectively combats ground looping tendencies... glides the plane smoothly and easily over rough fields. It's high on endurance, low on drag.



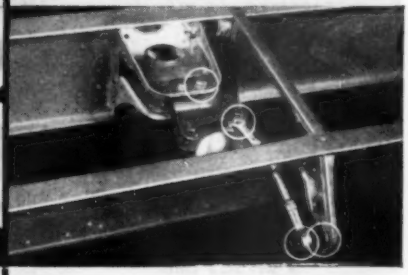
Built To Last. The Cessna's fuselage of all-metal monocoque construction can take a maximum of day-in day-out wear and tear. At the same time, it gives greater safety and performance, minimum maintenance.



Longer Life for valuable instruments is assured, because the Cessna's instrument panel is shock-mounted. Your instruments will be more accurate... and require less frequent servicing... when you fly the new Cessna.



25 Gallons Of Fuel are carried in twin wing tanks. You'll have a cruising range of more than 450 miles... over 4½ hours of non-stop flight. And you'll really go places with a top speed of over 120 m. p. h.



Sealed, Friction-free Bearings in a Cessna are never too loose, never too tight. On key positions throughout the control system, they give smooth, trouble-free action... as in everything else... *more for your money.*

Here, at long last, is real cross-country comfort, speed and performance in the light plane field at the right plane price. Adjustable, roomy seats with relaxed leg position assure you of comfort. Typical, clean Cessna design assures the performance. And the speed of this smart, 2-place ship will please you.

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- ERCOUPE 415C
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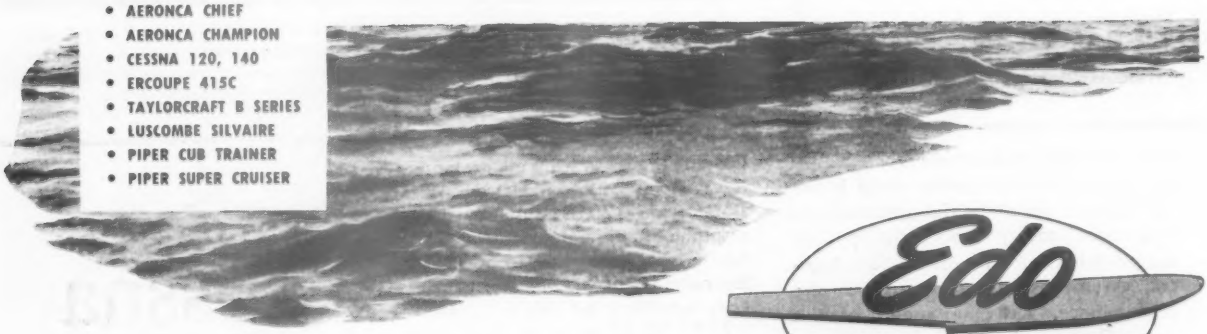

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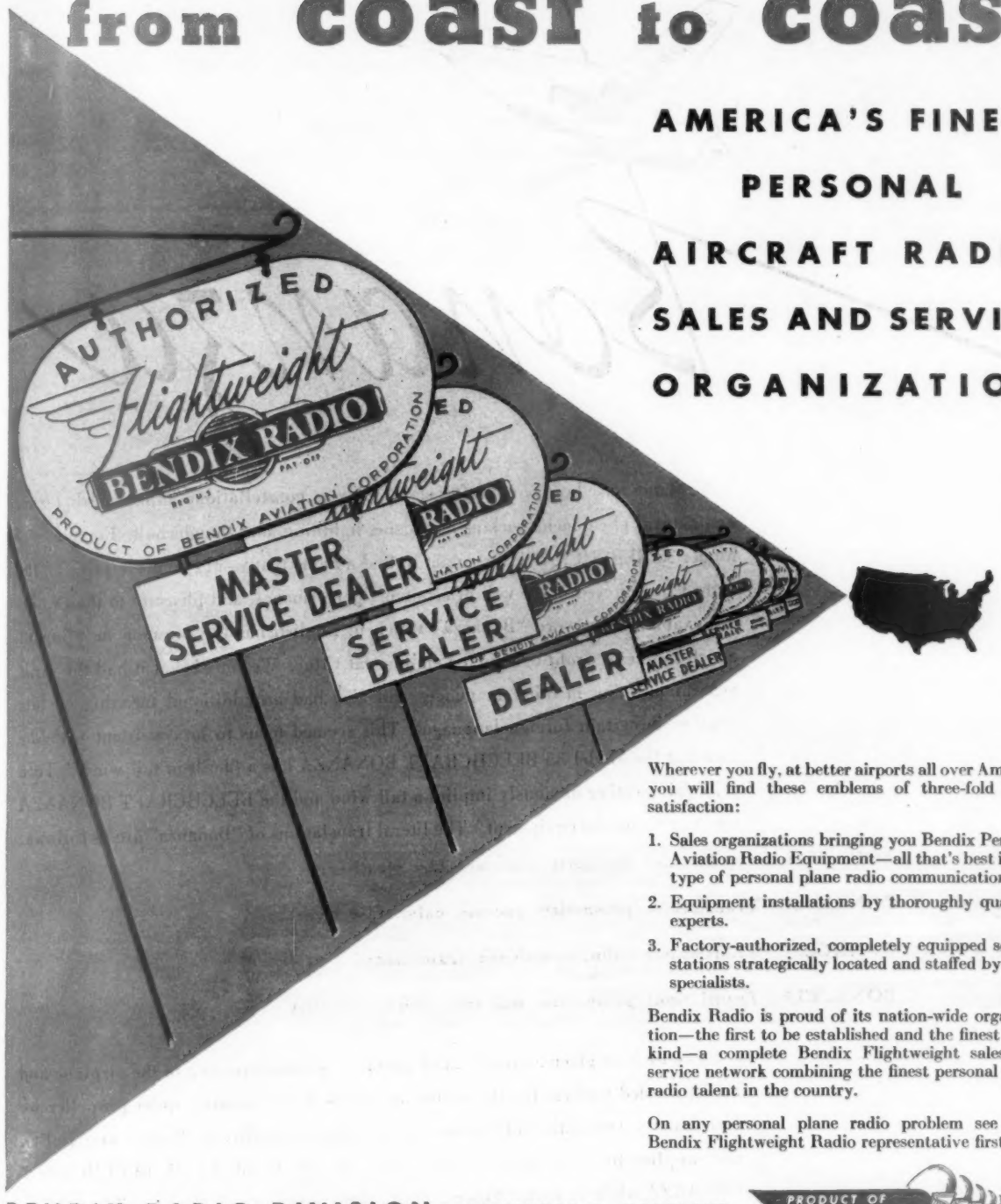

Wherever you fly, at better airports all over America, you will find these emblems of three-fold radio satisfaction:

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Servair Aviation Corporation
Room 420, Shoreham Bldg.
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Southern Air Services
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Southern Airways, Inc.
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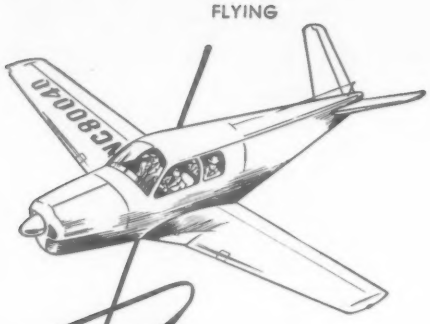
Atlanta, Georgia

U. S. Flying Services, Inc.
Albert Whitted Airport
St. Petersburg, Florida

Western Skyways Service
Portland-Troutdale Airport
Troutdale, Oregon



Bonanza

Airplanes have been named after stars, galaxies, constellations, animals, fish, birds, and natural phenomena such as hurricane, lightning, and thunderbolt. For the new Model 35 BEECHCRAFT we sought to find a name that would be descriptive of the extra value offered in the way of economy, performance, and pleasure to the owner. We examined the word "Bonanza" which in English has the common meaning of a rich source of profit or gain, or an unusual value. We found that it had the same general meaning in other languages and also had an additional meaning of fair weather in certain foreign languages. This seemed to us to be consistent with the fact that the Model 35 BEECHCRAFT BONANZA has a "built-in tail wind." To a pilot fair weather obviously implies a tail wind and the BEECHCRAFT BONANZA has it as "standard equipment." The literal translations of "Bonanza" are as follows:

Spanish . . . BONANZA. Translation: prosperity, success, fair weather.

Portugnese . . . BONANÇA. Translation: prosperity, success, calm, fair weather.

French . . . BONACE. Translation: calm, smooth sea, tranquility.

Italian . . . BONACCIA. Translation: prosperity, welfare, calm tranquility.

Since we have given a great deal of attention to soundproofing in the airplane and have provided mufflers for the engine as well as a slow turning, quiet propeller we feel that the translation of tranquility or calm tranquility in French and Italian also applies to the comfort of the occupants of the Model 35 BEECHCRAFT BONANZA while in flight. Summing up all the meanings of "Bonanza" in English and in other languages we feel that "Bonanza" is a fit name for our new airplane. We have designed it for the prosperity, success and pleasure of its owners and we are certain that it will fulfill those requirements.

Beech Aircraft

THE WORLD IS SMALL WHEN YOU FLY A BEECHCRAFT

CORPORATION
WICHITA, KANSAS, U. S. A.

FLYING
SEPTEMBER
1946

The Army's Civilian Air Force

Air National Guard and Air Reserve will back up the Regular Air Force.

By ORVILLE S. SPLITT
Office of Public Relations, HQ, Army Air Forces

THOUSANDS of former members of the Army Air Forces are joining, or soon will join, the newly-activated Air Reserve and the Air National Guard. Present plans call for 27 Air National Guard groups and 34 Air Reserve groups—a total of 61 compared with only 70 in the entire regular AAF.

Lieut. Gen. George B. Stratemeyer, commanding general of the Air Defense Command, has recently announced plans for these strong civilian components of the Air Forces. Only 400,000 personnel, or 70 groups, have been allotted to the regular Army Air Forces, he points out. But the AAF feels it must have available 1,500,000 trained officers and men to insure national security.

The difference, insofar as Congress will appropriate money and the states will cooperate in the Air National Guard, must be made up by the ANG and the Air Reserve.

So former AAF members who want to fly weekends now can dust off their wings. Air Reserve and Air National Guard training programs already are underway and scheduled to be in full nationwide operation by 1947.

The Reserve program calls for progressive activation of approximately 123 Air Reserve bases throughout the country. Eventually there will be at least one base

Civilian reservist and ex-AAF captain Andrew F. Bilek signs Form 1A before taking off in Texas. In uniform is Capt. Gerald Griffin, assistant operations officer at the Chicago Air Reserve base.

in each state. As this article is being written, the 40 bases shown on this page had been selected and by this time should be activated and training should be underway. Air Reserve flying was touched off at Memphis, Tenn., on July 1. The 83 remaining sites are planned to be activated by July, 1947.

As each new base is opened, publicity will be released notifying reserve personnel in the area to register for classification, assignment and training.

The mission of the Air Reserve is not merely to give former AAF men something to do on idle weekends but, in the words of Gen. Carl A. Spaatz, Commanding General of the AAF, "to provide, in an emergency, trained officers and men for replacements in and for immediate expansion of the Air National Guard and the Regular Army Air Force." The initial objective of the program is to maintain the flying proficiency of former AAF pilots and to continue new training, with activation of combat and service units to follow.

The Air Reserve will be composed of the Active and Inactive Reserve. The Active Reserve at first will include 17,500 combat crew pilot officers, 5,000 staff and administrative pilot officers, 27,500 non-pilot officers, 120,000 enlisted reservists and will receive unit and individual proficiency training. No training is now contemplated for the Inactive Reserve.

The Active Reserve will include units effectively organized for rapid mobilization, expansion and deployment, and additional trained commissioned and enlisted personnel for necessary replacements and expansion. These will be combat and service-type units and will be of three classes:

Class A units will be organized with a full complement of officers and enlisted men. Class B units will have a full complement of officers and an enlisted cadre. Class C units will have a full complement of officers only.

The following types of units will be included in the Air Reserve program:

Very heavy bombardment — wings, groups, squadrons.

Light bombardment — wings, groups, squadrons.

Troop carrier—wings, groups, squadrons.

Tow-target squadrons.

Night-fighter squadrons.

Emergency-rescue squadrons.

Reconnaissance squadrons of various types—long-range, weather and photo.

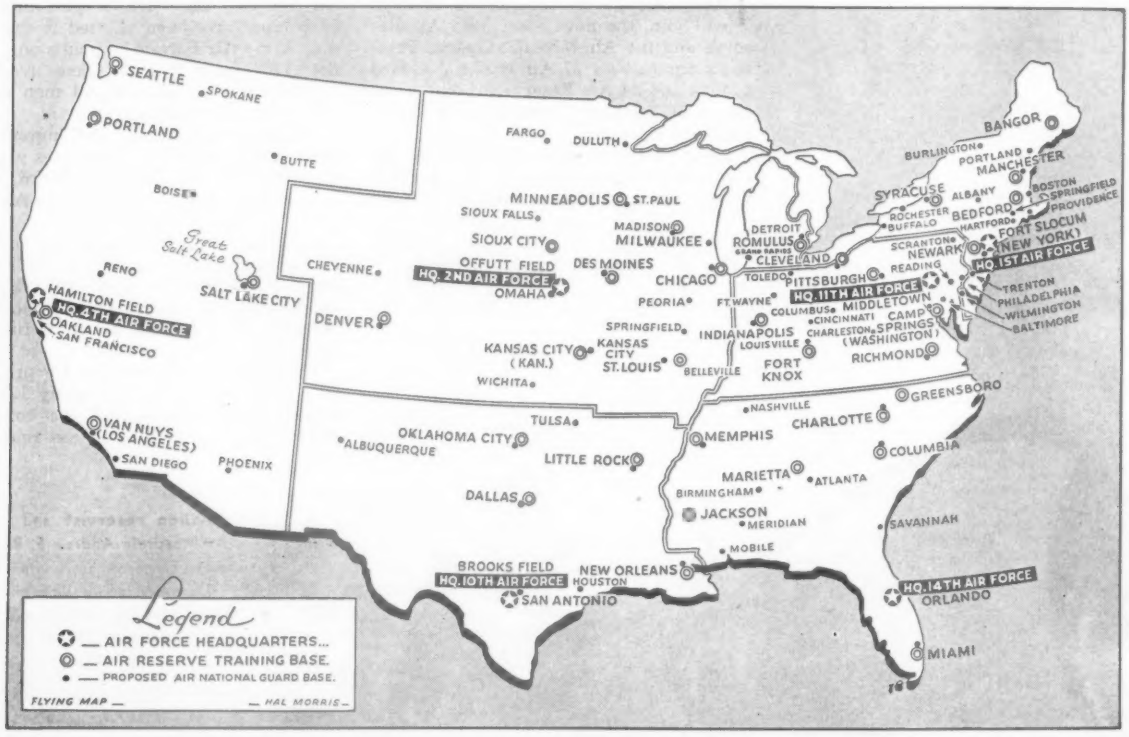
Inactive duty unit training for all personnel—rated (aircrew) and non-rated—will consist of weekly or semi-monthly progress training periods conducted at Air Reserve bases. Active reservists, however, will receive an annual 15-day tour of duty with the Regular AAF. Present plans, however, do not call for active duty training to begin until the spring of 1947 and it has been stated by AAF headquarters that it will not be possible to offer active duty to all personnel engaged in Air Reserve unit training during the fiscal year 1947, though every effort is being made to provide active duty training for all during fiscal year 1948.

Reservist training will include extension courses, classroom instruction at Air Reserve stations, and flying, plus annual active duty. In addition, opportunities for extended active service with the Regular AAF and for attendance at special service schools will be announced as they become available. Complete AAF extension courses are expected to be ready for reservists by January 1.

To provide flying training for the greatest possible number of reservists from available funds, aircraft to be used will include the North American *Mustang* and *Texan*, and the Beech *Kansas*. Plans call for reserve pilots to get approximately 80 hours flying time each year—at least four hours a month—with sufficient flying to be provided for other rated personnel to maintain their proficiency. As the program progresses it is not improbable that units will be re-equipped with the latest types of AAF aircraft, including jet-propelled fighters. The fact constantly stressed by high-ranking AAF commanders is that the equipment of Air Reserve and Air National Guard units must never be allowed to become obsolete. It is expected that reserve pilots will receive the opportunity to check out in the newest type aircraft during their annual tour of active duty. In order that more reserve pilots can be given flying time, flying training is not contemplated for reservists who pilot aircraft in civilian occupations.

Location of the Air Reserve training bases is being determined by population

(*Continued on page 64*)



Currently-proposed training bases for Air Reserve and Air National Guard. Forty Air Reserve bases have been designated out of 123 eventually planned. There will be 79 Air National Guard stations. Both organizations plan at least one base in each state.

Flyer's Dude Ranch

EVERY day is a flying day in Arizona and everyone makes the most of it. Sprawling in the desert six miles out from the center of Tucson is Wagon Wheels Ranch Airport, owned by Eben E. Mitterling and family—a family that plays a very important part in operating this unique dude-ranch airport.

Here revving engines mingle with the sound of horses hooves and the splash of swimmers in the pool. But the airport part of the operation is the thing that distinguishes it from ordinary dude ranches. Wagon Wheels is 2,470 feet above sea level and has two oiled strips for visiting pilots, and a full fixed-base operation with repair shops, charter services and plane rentals and sales.

The Mitterlings are a flying family from Sycamore, Ill., who became so entranced with the aviation advantages of the southwest that, after a visit a year or more ago, they decided to stay and fly to their heart's content. There is father Eben, who is a pilot and manages the airfield; his wife, who oversees the running of the ranch house, and son Donald, also a pilot; and Donald's wife.

Wagon Wheels is a growing operation. It is able to accommodate 35 to 40 guests now and the Mitterlings have great plans for its future. They are planning to enlarge and deepen the swimming pool, provide additional game and sports facilities, and are now scheduling erection of a new 60x80-foot hangar. They also are planning to install

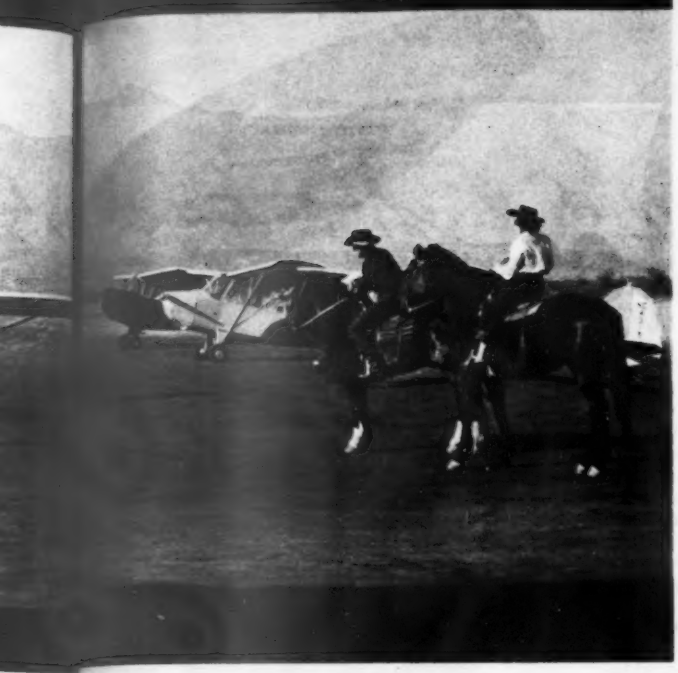
AIRPLANES COMPETE WITH HORSES AS AN ATTRACTION AT ARIZONA GUEST RANCH.

Visitors from Connecticut, Dr. and Mrs. Emmet C. Wolf, are assisted from plane by their hosts at the ranch airport.

Entrance to unique ranch-airport, with wagon wheels which give it name.

Newly-arrived plane taxies to apron under guidance of owner

Wagon Wheels ranch and airport. Hangars and air activities directly adjoin other guest facilities.



Eben Mitterling. Son Don and wife on horses wait to greet guests.

Flying Mitterlings co-operate in making ranch management a family affair. Left to right are Son Don, mother, Father Eben, and Don's wife.

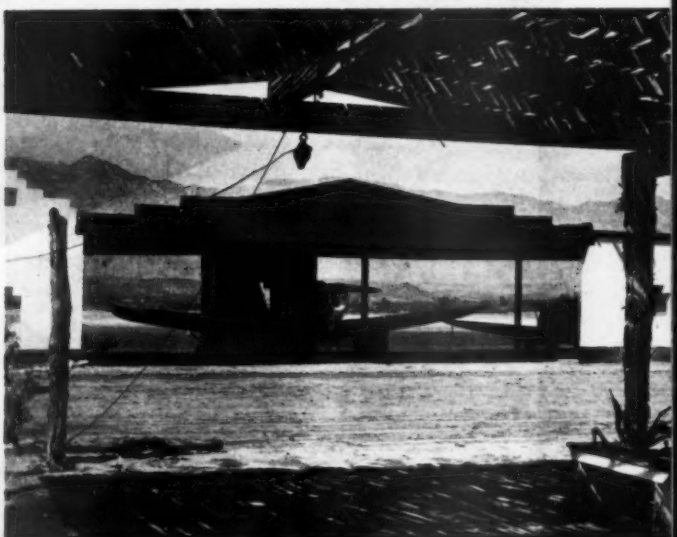
suitable dining room facilities, a project which has been held up by construction shortages.

Since they bought the little guest ranch on the outskirts of Tucson they have constructed a 2,400-foot north-south strip and a 2,800-foot northwest-southwest strip, have installed gasoline and oil products, and have contracted with a newly-launched outfit of war veterans to provide ordinary fixed-base services.

This last arrangement is an important reason for Wagon Wheels' success. The organization is known as Skyriders, Inc., and is sparked by ex-service men who dreamed of just such a setup when they were in the armed forces. Orlando J. Miller, a former Air Forces man, is president. His younger brother, Duane, a one-time Troop Carrier Command pilot, is vice-president; and Jim Golden, ex-Navy air mechanic, is maintenance manager. Eugene Steinheimer, a Tucson pilot of long standing, pilot in the Civil Air Patrol, and World War I veteran, is vice-president in charge of sales.

Skyriders now services the guests' planes, maintains a full line of parts and supplies, and can furnish complete overhaul service. It has the Funk distributorship in Arizona and New Mexico and the agency for the larger and higher-priced Skycraft planes in Arizona. Skyriders has arranged for standardized financing and sells insurance right along with the planes. Skyriders, too, arranges to rent planes and give instruction to non-aircraft-owning guests—and to anyone else, for that matter—and offers charter services.

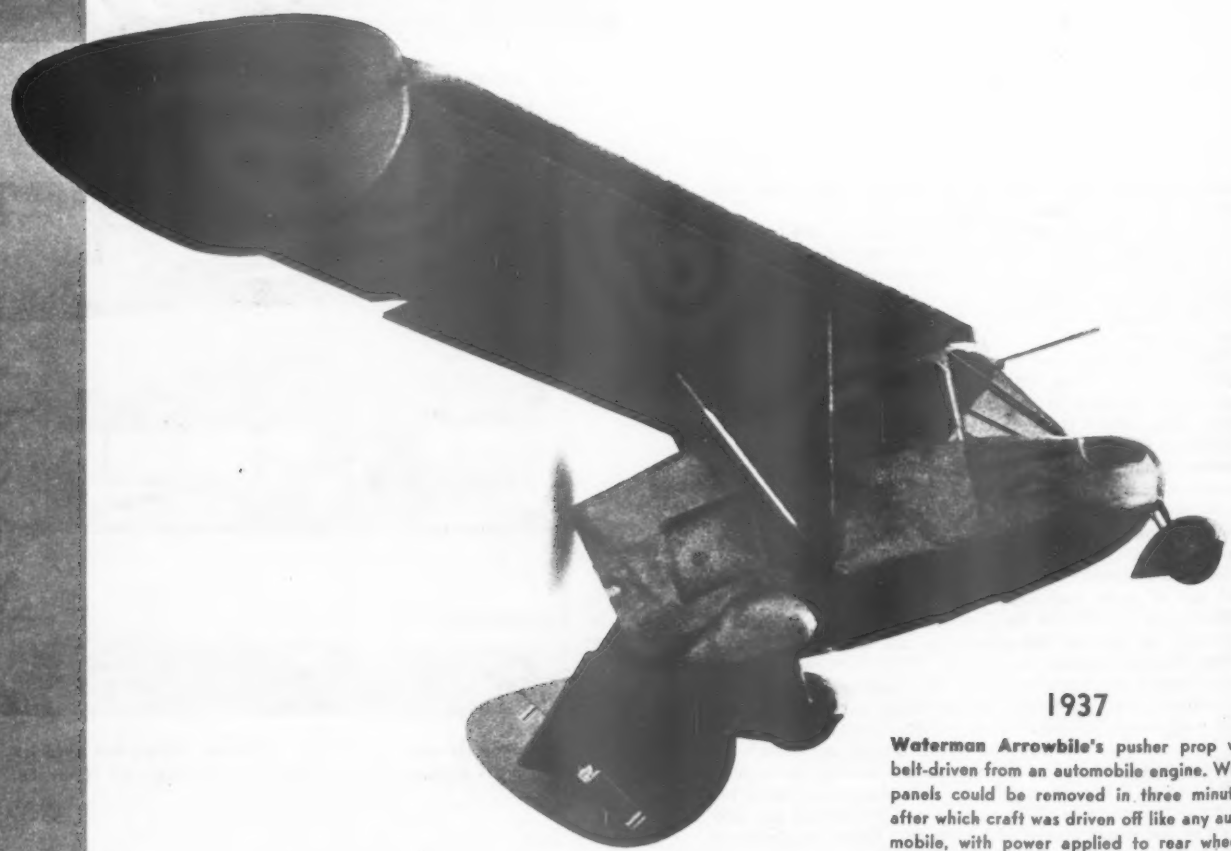
The result of this dual arrangement is an attractive guest ranch where other western sports are always available but flying is the keynote. The airfield is right out of the windows of the guest rooms and cottages. Flying visitors and guests are not faced with the typically long trek from the nearest city airport to a ranch many miles away by automobile. The west is big, but with setups like Wagon Wheels its sports are no farther away from the eastern vacationist than the speed of his plane permits them to be. END



Hangars for six aircraft now exist at Wagon Wheels and more are to be built. In Arizona, principal need is to get planes out of hot sun.

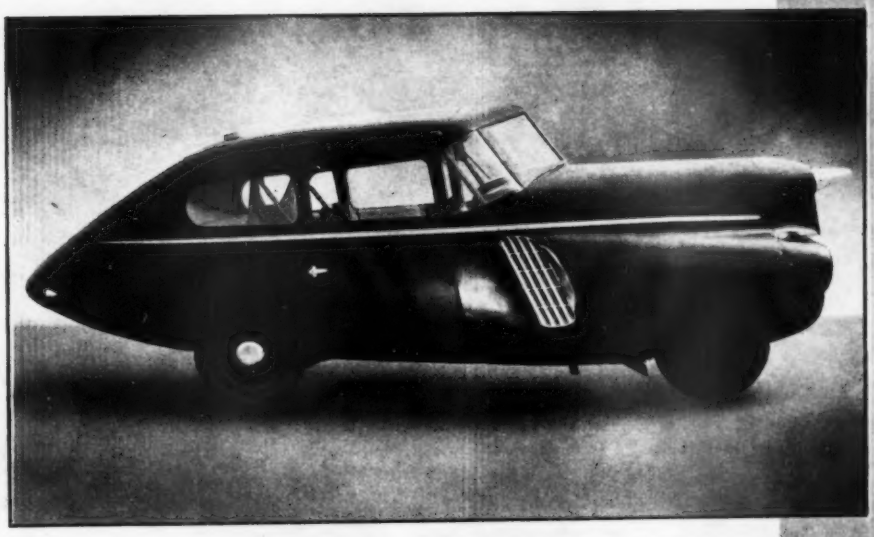
Flying Autos

NINE years apart in time, the two roadable aircraft pictured on these two pages are remarkably alike in many respects. The Waterman *Arrowbile* first flew in 1937. In addition to its roadable feature, it comprised an unconventional aircraft powered by a Studebaker automobile engine. Southern Aircraft's flying car flew early this year and is undergoing further development. Each of these craft has demountable wings. Each has tricycle gear with power applied to the rear wheels. Even their shape is similar in general if not in detail. Neither plane has been more than strictly experimental. The *Arrowbile* cruised at 105 m.p.h., was claimed to be stall-proof and non-spinnable. Southern Aircraft's flying car cruises at 110 m.p.h. and stalls at 50 m.p.h. Both planes are two-place.



1937

Waterman Arrowbile's pusher prop was belt-driven from an automobile engine. Wing panels could be removed in three minutes, after which craft was driven off like any automobile, with power applied to rear wheels.



1946

Southern Aircraft roadable has tail, wings and tailbooms demountable in a single section, after which plane can be driven off like an automobile. The same wheel control is used for steering on the ground as in the air.

Model

Airpark dedication in June attracted nearly 100 transient pilots, thousands of visitors to see Eldon's model airpark. Some of visiting planes (below) are shown on spacious parking area.

Administration building is of prefabricated steel, contains manager's office, a small snack bar, lounge space with excellent view of park, and washroom facilities.

Curved windows give unobstructed visibility from pleasant lounge of unusual administration building.

Does your community need an airpark? Eldon, Mo., shows laggard towns how to go about getting one.

Airpark

Manager's office is in southwest corner of administration building. Radio equipment is experimental.

ELDON is a small town (pop. 2,590) in central Missouri, near the Lake of the Ozarks. Besides a fierce civic pride, Eldon is distinguished by its model small-town airpark which was built in the past year and dedicated in June. To build their park without state or Federal assistance, the citizens of Eldon voted $25,000 in bonds a year ago February. For their money they got a practical and economical layout which other rural communities can well copy. The landing area consists of two drained sod flight strips 300x2,000 feet and 300x2,300 feet respectively. Though only turf, they first were carefully graded, crowned and seeded. Another strip 100x800 feet is set aside for aircraft parking and servicing, with an extra 200 feet for overflow. The parking stand is separated from the hangar area by a 200x800 foot park with several shade trees and a number of new plantings. Two taxi strips connect the hangar and storage area with the flight, parking and service areas. Two buildings have been constructed: an attractive pre-fabricated administration building, and a 57x57-foot four-plane concrete and steel hangar. Associated Airports, Inc., will operate the airpark under a model contract. Net cost is about $19,800.

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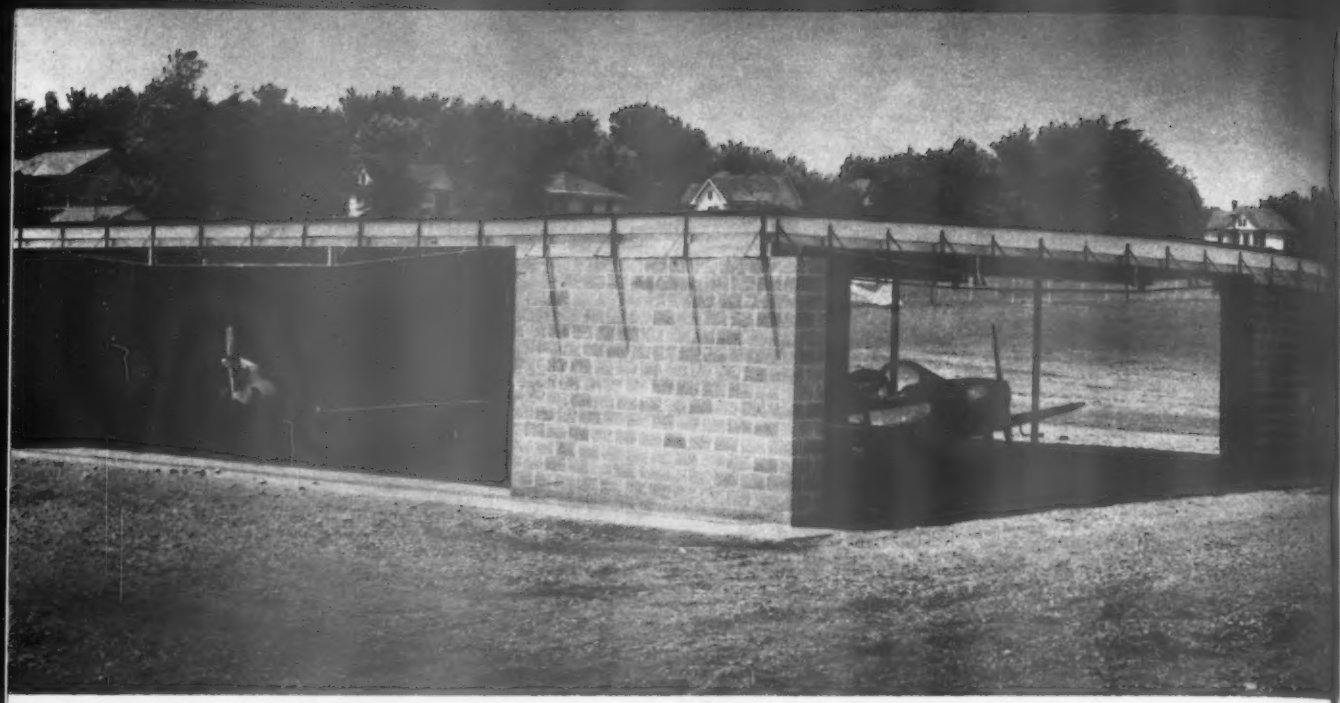


Efficiency and economy keynote Eldon's airpark. Four-plane cement-block hangar (above) is built so that each plane can be rolled out without having to move others. One section of hangar is used for a small repair shop. The light truck (below) is an experimental "aircraft service station on wheels" being tested at Eldon. Besides gasoline it carries a complement of tools, oil, air compressor, and essential repair equipment.

Uncle Sam's Pilot Pals

By FRED HAMLIN

Washington Editor of FLYING

CAA has assigned eight specialists to promote U.S. lightplane flying.

IF YOU HAVE AN IDEA for improving the lot of the private pilot and want something done about it, look up the nearest regional office of the Civil Aeronautics Administration. There's a personal flying specialist at each office.

It's his job to help you and he loves his work. He'll either get action for you or a strong recommendation into CAA's front offices. And his recommendation bears weight, for he is one of a group of personal flying specialists who are spearheading a CAA crusade to promote private flying. Among the various methods they use is the important business of giving the personal pilot a seat at the discussion table where Federal flight policies are formulated.

Beyond representation, here is a summary of what these private-flying representatives propose to do. It is compiled from the seven-point program planned at a national gathering of the group in Washington late in the spring.

1. Uniform sales and service, coast-to-coast—"to make it possible for the cross-country pilot to pick up at reasonable intervals everything from a check job to a major overhaul—and to know in advance approximately what it is going to cost him."

2. Selling communities on small airports.

3. Promoting the construction of more hangars. The field men feel that an aviation enthusiast cools perceptibly when he finds no protection available for his aircraft investment.

4. Work toward convincing operators and plane salesmen not to oversell aviation—to the ultimate loss of an otherwise enthusiastic customer.

5. Co-operation with state aviation officials. This is already going forward and includes in some parts, notably New York State, the training of state troopers in enforcement of uniform, Federally-okay laws; also to equip state trooper cars with roof lights as aids to lost pilots.

6. Aid veterans. This includes help in getting their civilian licenses and advice on education.

7. Educate the women in aviation safety. This calls especially for meetings with the PTA's and the Ladies' Aids to prove to them that Johnny won't take off the chimney top the first time he flies solo.

Charles E. Cox (hand on propeller), CAA private flying specialist for eight midwestern states, hears some complaints and suggestions from a group of pilots at a Chicago airport.

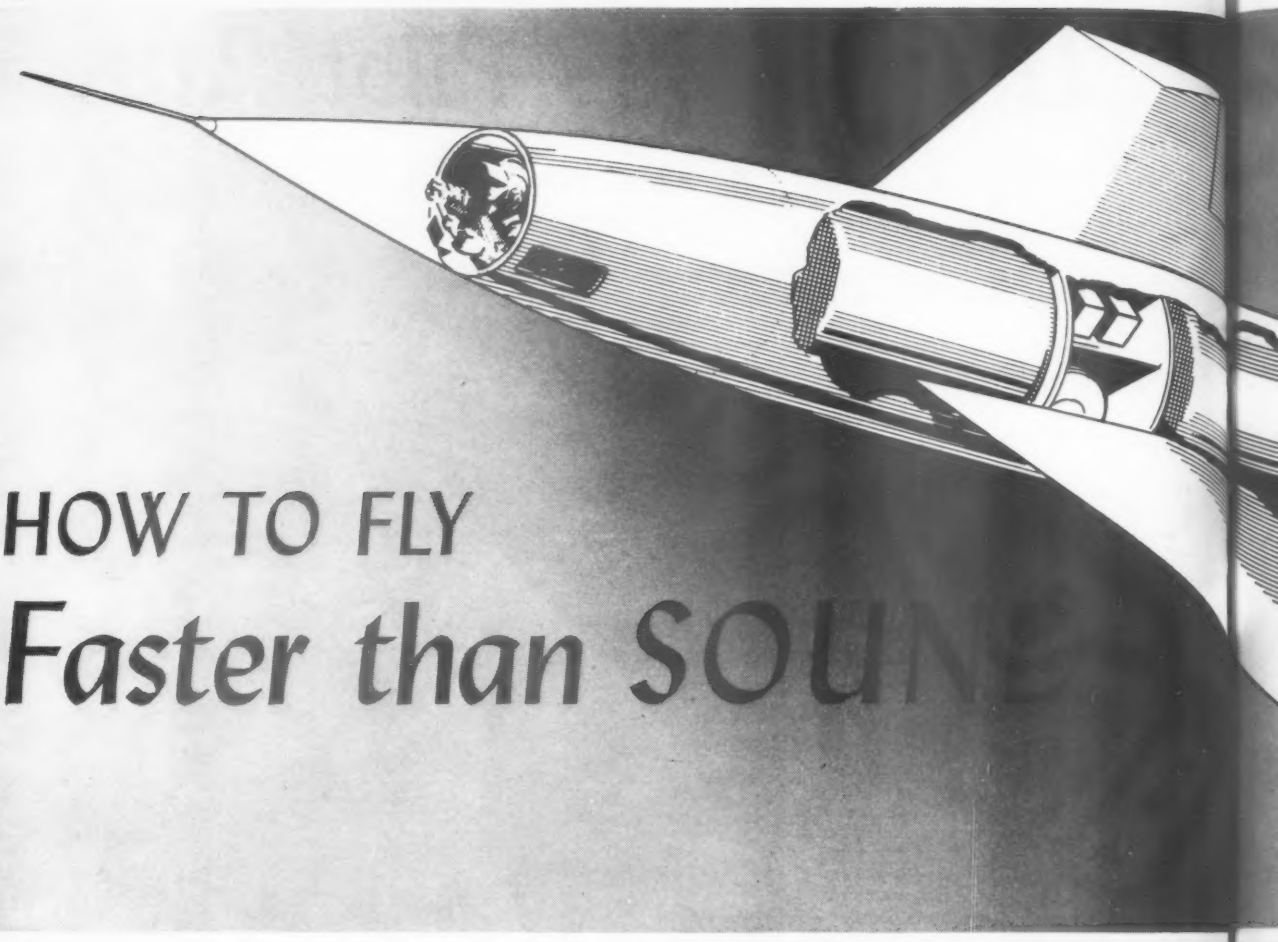
Heading the work is John Geisse, engineer and World War I pilot. For years he has led a one-man crusade in the lightplane field for safer aircraft, simplified training, and a minimum of regulation. He is now assistant for personal flying development to CAA Administrator T. P. Wright.

Under his guidance in the field—the men to whom the private pilot should go—are specialists with headquarters at the CAA's eight regional offices. Without exception, these men are pilots, and most of them have had wide experience with lightplanes. Four of them have been flying nearly 30 years, three nearly 20, and the eighth, although he did not solo until the late '30's, has logged more than 2,000 hours. Here's the line-up:

Roland Rohlfs serves New England, New Jersey, Pennsylvania, Delaware, Virginia, West Virginia, Maryland, and the District of Columbia. His headquarters are at 385 Madison Avenue, New York 17, N. Y. Rohlfs is 53 and was born in Buffalo. His aviation career includes experimental engineering for the Curtiss Airplane Company, the Fairchild Camera Company and Pitcairn Autogiro. He was also operation manager for Aeromarine Airways and the Aerial Advertising Company. He was a CAA-CPT superintendent early in the war, holds both a commercial pilot and a ground instructor's rating. Flying a Curtiss *Wasp*, back in 1919, he broke the altitude, speed and climb records. He joined CAA in 1940 and became a regional superintendent in the CPT Program.

Carl W. Clifford, serving North and South Carolina, Tennessee, Florida, Alabama, and Mississippi, is headquartered at 84 Marietta Street, N.W., Atlanta 3,

(*Continued on page* 78)



HOW TO FLY
Faster than SOUND

Planes must crash through a wall of air before they can fly faster.

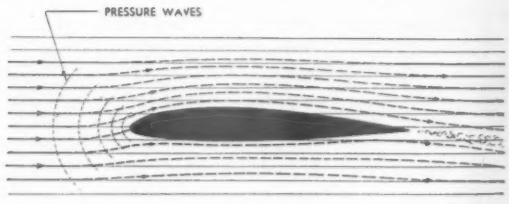
AVIATION now is approaching supersonic speeds. War-spurred research has advanced our knowledge of the aerodynamics of such speeds. We are developing power plants which can achieve them. German research, especially, is aiding us in the design and construction of supersonic planes and engines.

Even today, so far as is generally known, no airplane has ever flown faster than sound. The only man-built vehicles ever to achieve supersonic speed were missiles, carrying as their payload not men or freight but explosives or instruments. Supersonic rocket craft have, of course, been built—but none that depended on wings for lift and for the all-important safe landings.

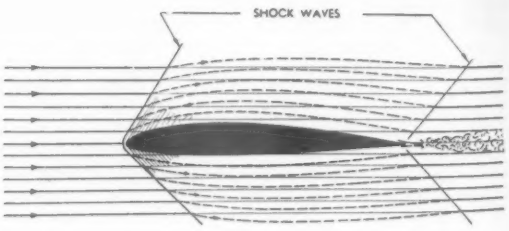
Several U. S. rocket planes are known to be in the works. One, the Bell XS-1, is in an advanced stage. U.S. research workers are experimenting extensively with captured models of the German Messerschmitt Me-163, a very fast (but old) rocket-propelled aircraft. A dozen supersonic wind tunnels have been built or are in construction in this country. Yet with all this research it is generally conceded that we have hardly scratched the surface of supersonic knowledge.

A great deal of what we know is illustrated on these pages. This information is complete enough for us to outline many of the major problems and suggest solutions.

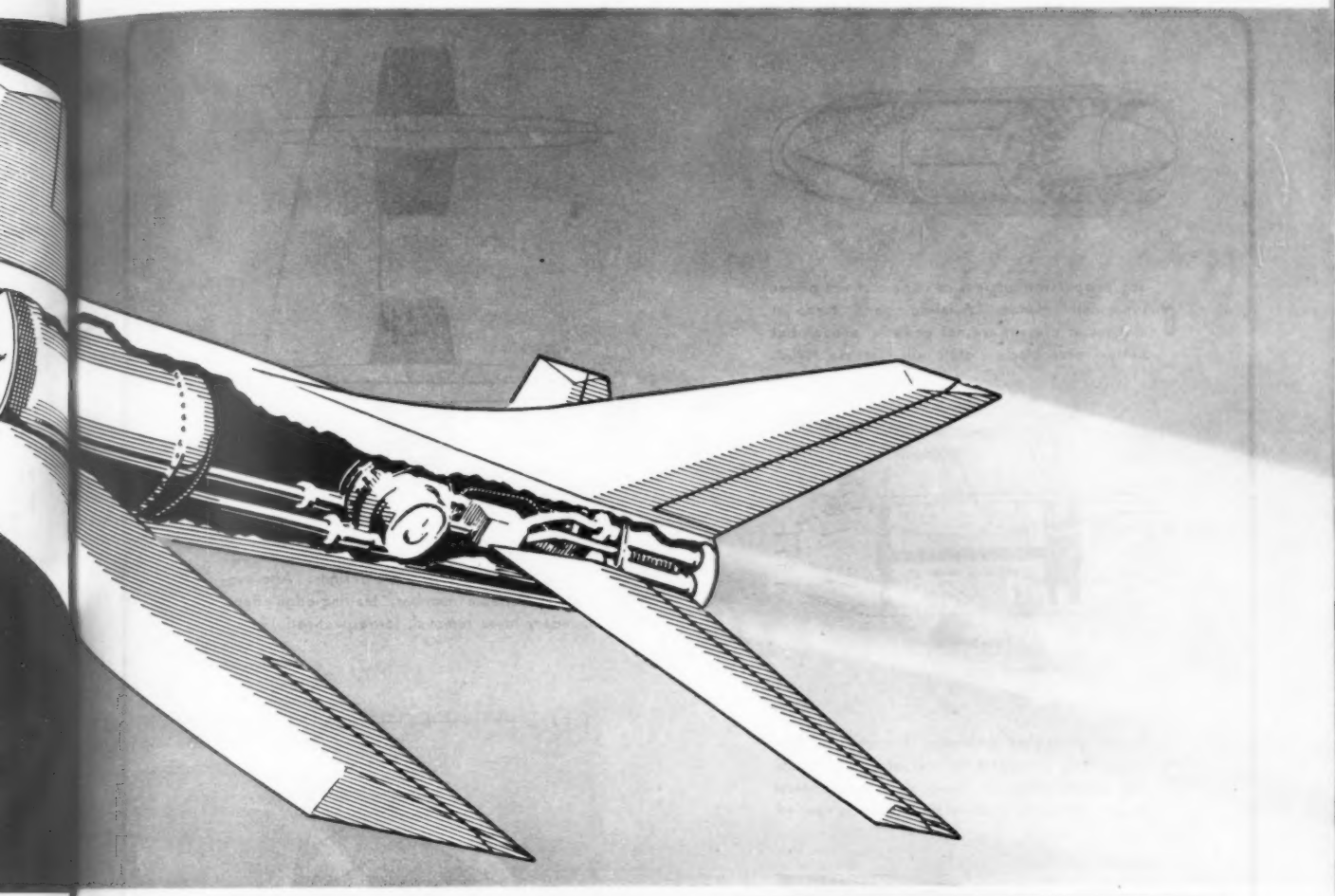
Planes act differently when they approach the speed of sound. There is no longer a smooth flow of air over the wing. Instead, there is buffeting, a rattling and a banging, as though

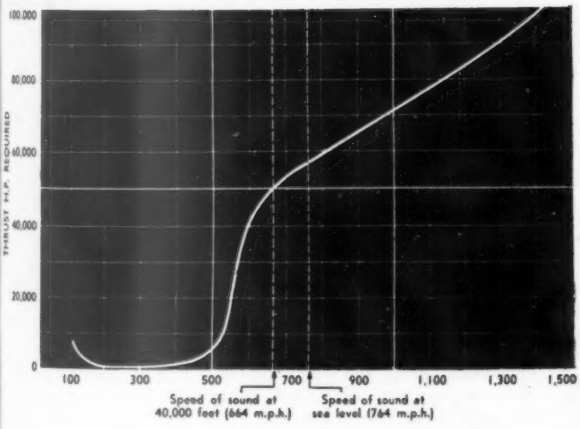


1 **At slower speeds** the air "feels" the wing approach and moves to make way for it. This run-ahead warning is traveling at the speed of sound, giving time for the air to flow aside.

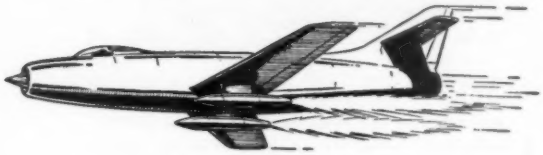


2 **At supersonic speeds** the plane is traveling faster than its run-ahead warning. The air cannot flow around it smoothly. Shock waves build up on leading edges like bow waves on a boat.



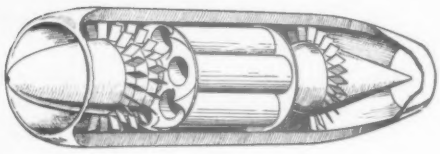


3 **Power requirements** increase enormously as the speed of sound is approached because of the great drag created by the shock waves. This diagram shows power needed for various speeds by a conventional airplane at 40,000 feet. Note the 10-fold increase in the transonic zone of 500 to 664 m.p.h. A plane that needs 5,000 h.p. to fly 500 m.p.h. at 40,000 feet needs 50,000 h.p. to fly 664 m.p.h. After reaching the speed of sound, power needs continue to rise, but more slowly.

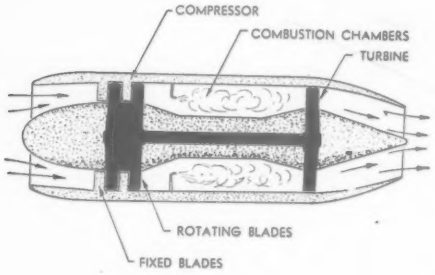


4 **Rocket boosters** may push supersonic planes through transonic speed region. High speed is needed because stability changes occur in this zone and it must be passed through rapidly.

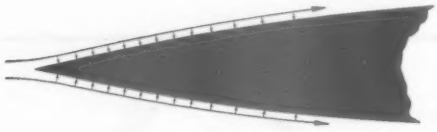
5 **Typical wing** cross-sections for supersonic flight are shown above and below. Such airfoils are thin and have sharp leading and trailing edges. They actually are so thin that obtaining necessary strength is a very serious problem. They also contain little room for fuel, which is needed in much greater quantities because of the high power requirements of supersonic flight.



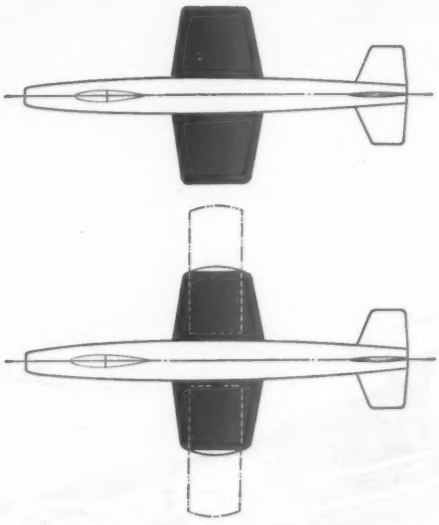
6 **Jet propulsion** engines of some sort will power supersonic planes. Axial-flow and turbo-jet engines at present are not powerful enough but better rotor blade metals will increase thrust.



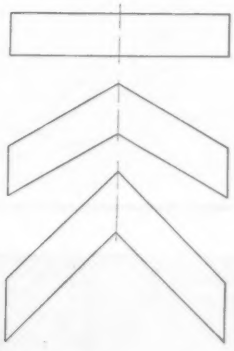
7 **Turbo-jet engine** schematic view, showing flow of air. Flow is similar in the ram jet engine except that engine relies on speed alone to compress its air. No compressor or turbo rotor is needed.



8 **Air friction** will heat the cabin and wings at supersonic speeds. At the speed of sound, cabin temperatures would soon reach 150°, more at higher speeds. Cooling methods must be developed.



9 **Extendable wings** may be one solution to high landing speeds of supersonic designs. Also suggested: variable camber, leading-edge flaps, boundary layer removal, low-aspect-ratio wings.



10 **Swept-back** (above) and swept-forward wings fly faster. An ideal shape for supersonic flight appears to be a triangular wing with tip forward.

it were smashing into a wall. In fact, that's what it is. That wall is the sonic barrier.

At slower speeds, the air opens up to allow the wing to slide through. Actually, the pressure effects of the advancing wing are propagated ahead faster than the wing itself is traveling. In effect, the air "feels" the wing approach and moves to make way for it. This "message" that the wing is coming travels at the speed of sound.

Therefore, when planes approach or equal the speed of sound, there can be no "message" received ahead of the plane. The air is not prepared for the wing. It has not started to flow to receive it. So the wing slams into its "brick wall."

That "wall" is no more than the air piling up ahead of the leading edge of the wing and plane.

The air pile then breaks up and goes over the wing as a repeated series of shock waves which may do major damage to the craft's structure.

These effects are felt long before the speed of sound itself is actually reached. Why?

The fuselage and the wing are rounded. The air is compelled to travel over these rounded surfaces. In so doing it speeds up—possibly to sonic velocities. Every rounded rivet makes the air over that rivet travel faster. This faster speed is what, in essence, gives the plane its lift. But at transonic speeds it also causes shock waves. Each rounded surface may propagate its own shock wave. Even the rivets may set up their own tiny shock waves. This causes the fearful crashing and wrenching that planes endure when in compressibility trouble.

Compressibility also causes terrific drag. As the accompanying chart shows, it takes 10 times as much power to increase speed from 500 to 664 m.p.h. as is necessary to get to 500 m.p.h. It may take 100,000 h.p. to attain 1,400 m.p.h.

We do not yet know what kind of engines we can use to develop such power. We can achieve it briefly with rocket motors, but rockets are at a disadvantage in the long run because their fuel is so heavy. We may get enough power out of turbo-jet engines, but first we will have to improve them substantially. The big problem is that the metals of their turbine blades are unable to withstand the great heat necessary to operate most efficiently. Better metals (*Continued on page 86*)

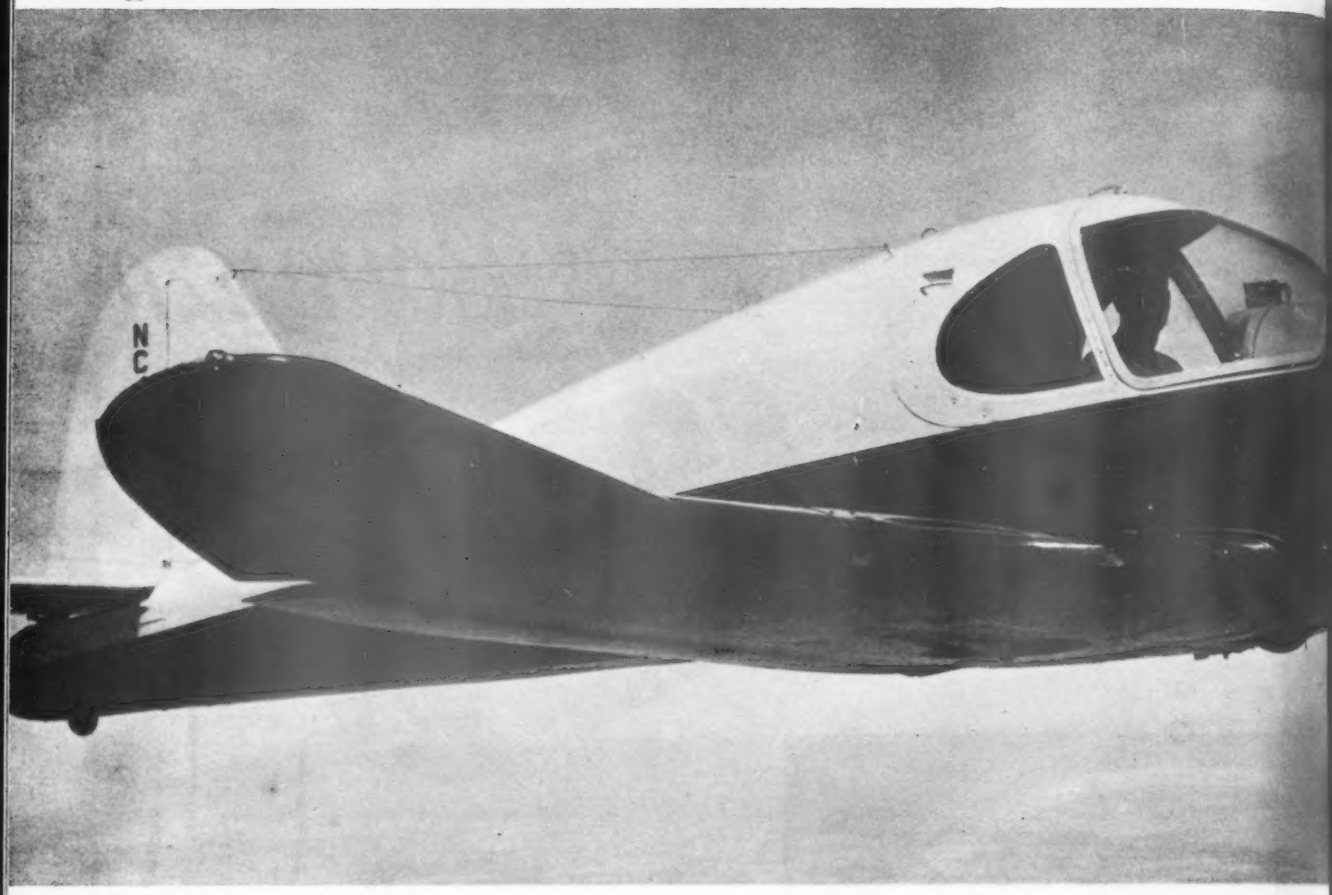
THE *Bonanza*

Butterfly tail gives the Bonanza excellent maneuverability. It will be used on all future Beech models.

The cabin seats four and throw-over control wheel will be standard. Cabin has been soundproofed down to 93 decibels.

BEECHCRAFT has entered the four-place plane market with a fast all-metal monoplane called the *Bonanza*, which has the unconventional butterfly tail that Beech pioneered. No other four-place personal plane so far announced should be able to catch the *Bonanza* with its 184 m.p.h. top speed and cruising speed of 175 m.p.h. on 70 per cent of the output of its 165-h.p. Continental engine. The *Bonanza* has retractable tricycle gear, a wing span of 32 ft. 10 in., length of 25 ft. 2 in., height of 6 ft. 6½ in. Payload with full tanks is 780 pounds, maximum range is 750 miles at 165 m.p.h. at 10,000 feet. The *Bonanza* will sell for $7,345 fly-away Wichita, equipped with full flight instruments, navigation and landing lights, insulated cabin, two-way radio, windshield de-icers, controllable propeller, marker-beacon receiver and homing loop.

Tricycle gear will withstand 600-f.p.m. drop. Full-swiveling nose wheel is steered by brakes.



In cruising position, the "V" appears to be flying nose high. Flap is depressed 6½°. Bent-up wing tips improve stability.

THE *Culver V*

FLYING's CHECK PILOT

EDITOR'S NOTE

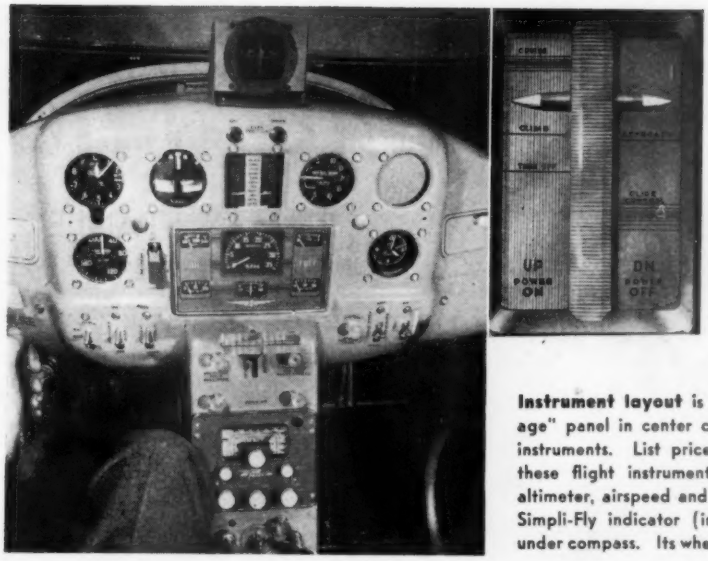
This series of articles is intended to help the pilot and prospective plane owner evaluate aircraft now on the market. Only aircraft holding a CAA Approved Type Certificate are used. The author is not a professional test pilot. He evaluates each aircraft through the eyes of an average private pilot who flies for business or sport.

HERE is another airplane that is going to have the airport gossips jabbering fiercely for some time to come. Because it is a new, rather daring entry into the average-man's-airplane market, the Culver "V" is inevitably in for a verbal beating from the Quiet Birdman set. So, right at the very beginning, let me caution the prospective airplane owner: don't believe most of the anti-Culver bunk you will hear about this interesting design. Fly it, then make up your own mind.

In the report that follows there will be some criticism of the "V." But it will be exactly the kind of criticism I have made of other airplanes—including the best that are made. None are perfect.

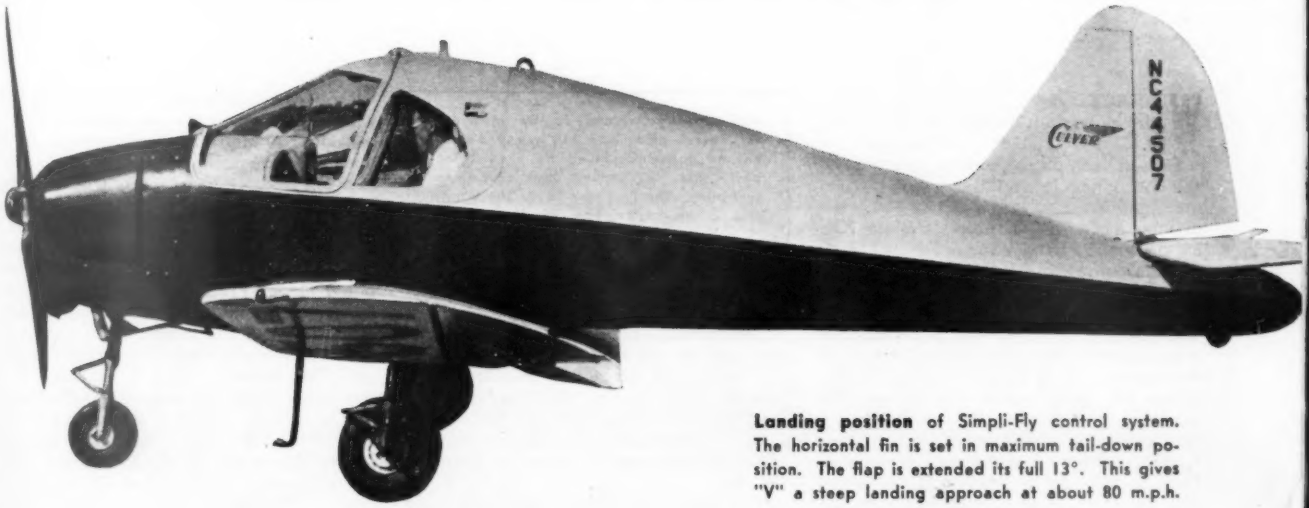
Advance publicity has created a lot of interest in the "V's" so-called Simpli-Fly control. This interest ranges from mild curiosity to a notion that Culver has hit on some new way to defy gravity. Actually, Simpli-Fly can be described briefly: it's an old-fashioned trim tab hooked up with an old-fashioned flap. This combination, plus a simple position-indicating instrument in front of the pilot, is the sum and substance of Simpli-Fly. Some people will like it, others won't. Personally, I do.

This control system is the most important single feature on the Culver V. Its linkage and limitations gave Culver engineers a few headaches during the plane's CAA Approved-Type-Certif- (*Continued on page 74*)



Instrument layout is good. "Package" panel in center contains engine instruments. List price includes only these flight instruments: a standard altimeter, airspeed and compass. The Simpli-Fly indicator (inset above) is under compass. Its wheel is not shown.

Tricycle gear and brakes are sturdy enough to permit "V's" normal 60-m.p.h. landings. Propeller hub has fittings for streamlined spinner. Note center section anti-stall strips.



Landing position of Simpli-Fly control system. The horizontal fin is set in maximum tail-down position. The flap is extended its full 13°. This gives "V" a steep landing approach at about 80 m.p.h.

I Flew 'The Wing'

By MAX STANLEY
Engineering test pilot, Northrop Aircraft, Inc.

THE GIANT XB-35 GETS AN "OKAY" FROM ITS TEST PILOT

Aircrew that flew the XB-35 for the first time included Flight Engineer Douglas, Co-pilot Bretcher and the author (left to right).

Max Stanley learned to fly in order to 'cover' offices of his west coast finance company, found he liked flying best, sold the business and became a test pilot. The first man to fly The Wing, this is his description of that flight.

WE RACED down the runway, my co-pilot calling our air speeds: "70 . . . 80 90 . . . 100 . . . 110 . . . 120 m.p.h. . . ."

I eased back on the control column, felt the nose wheel leave the runway. A second later we were airborne—on the maiden flight of Northrop's tailless XB-35. the giant Flying Wing.

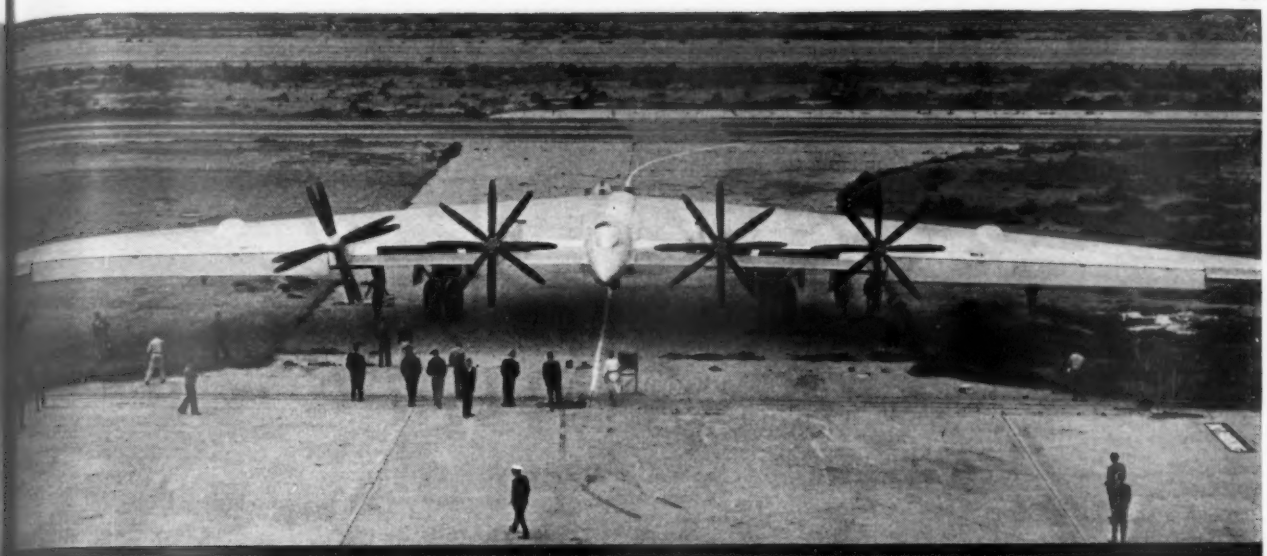
It was funny, but I didn't feel jittery or tight in the midriff. I had put The Wing through enough taxi runs to know that it was going to fly. I did feel a tremendous responsibility—not only for my crew but for the millions of dollars invested in The Wing, the thousands of man-hours, the hopes of its builders. It occurred to me that I must be a little crazy—crazy about flying. I became interested in aviation back in 1935, got a private pilot's license and bought a Fairchild 24 to fly to the various offices of my company. That was the beginning.

Before long I had disposed of my business just to get in more flying time. I was doing test flight and military work before the war broke. And I served with Lockheed, Pan American and United Air Lines in overseas ferrying flights before I went to Northrop Aircraft in October, 1943.

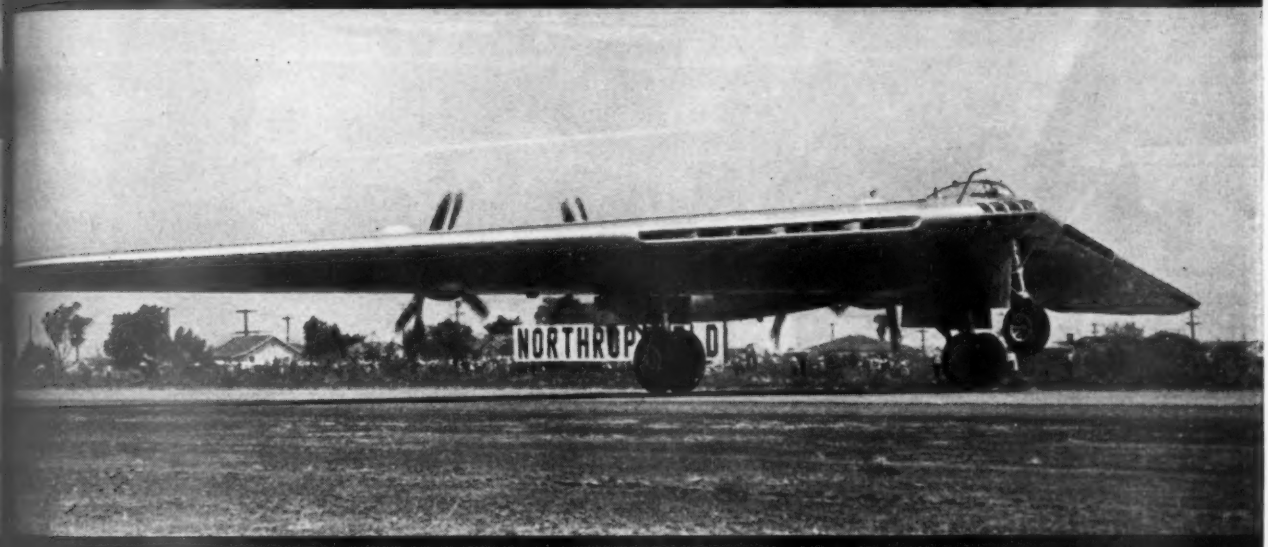
You can't be around Northrop long without becoming interested in flying wings. I soon was making familiarization tests in N-9-Ms, the small, twin-engined planes of the same basic design as the four-engined XB-35. I found that they fly like any other plane. Their aerodynamic principle is exactly the same except that, without tail and fuselage, they have considerably less drag than has a conventional plane. From the pilot's standpoint the conventional and wing-type planes are just about the same. Both have the customary wheel control and rudder pedals. The fact that they operate on unconventional surface controls does not call for any special pilot technique.

In doing away with the tail, designers of the XB-35 placed rudders toward the outer tip of each wing, faired in as part

(Continued on page 66)



Elevons and split rudders are on trailing edge of the 172-foot wing. Covered bulges on wing and center section are gun turrets.



First takeoff is shown above, just as wheels left the runway. Author left the wheels down (below) during the climb to 8,000 feet.

Free parachutes are available to club members. Here Lillian Gruenwald walks under Luscombe wing ready for an acrobatic flight.

Cross-country flight is plotted by Manager Wayne Carpenter (right) for customer.

Recreational facilities were built especially for members. Other privileges include a 10 per cent discount on all purchases, including gasoline and oil.

Flying is Cheap in Waukegan

By CURTIS FULLER

Assistant Managing Editor of FLYING

Wayne Carpenter (left), manager of club and airport, discusses instruments with Club Member Carl Swain, who is in Navy.

No pilot can complain about the high cost of flying at this Illinois airport.

WAYNE CARPENTER, manager of the Waukegan Air Service, Waukegan, Ill., is a stocky redhead with a stubborn jaw and an experimental turn of mind. He has just embarked upon a revolutionary plan for selling plane time and instruction which he expects either will break him or will prove a model for other operators across the nation.

"Other operators are going to think I'm nuts," Carpenter says, jutting out his chin a bit, "and maybe I am. But I'm going to take a whirl at it anyway. Maybe I'll be the goat. Maybe the other operators will think I'm trying to cut rates. But it isn't that. I'm going to determine once for all just how important the cost factor is in attracting business."

Here are some of Carpenter's rates: $3.50 per hour for a 50-hp. Piper J3 trainer; $4.50 per hour for a Piper J5 *Cruiser;* $8 per hour for a 220-h.p. Boeing *Kaydet* (Stearman), $5 per hour for a 65-h.p. *Ercoupe;* $8 per hour for a Stinson 150 *Voyager,* $2 per hour extra for all instruction.

Financial suicide? That's what some of Carpenter's competitors claim he's committing. But he looks at those rates from a completely different viewpoint.

"I was sitting in one foggy day reading Fred Hamlin's article, 'The Bite,' (FLYING, February, 1946) in which he cited some instances of airport operator gouging. Well, it set me to thinking. Our rates here have always been pretty reasonable [see the accompanying table], but I didn't make any money on plane rentals last year, though I had 115 students—excluding the Navy boys from nearby Great Lakes who came up to fly. I went over our whole operation and decided to try something new."

That "something new" is an operator-sponsored flying club, which Carpenter calls, rightly enough, "The Economy Flying Club." Its most important features are a yearly membership fee and the agreement of members to purchase a minimum amount of flying time each month. Carpenter figures that these guarantees will keep his planes busy enough so that he can reduce rates drastically—in fact from 33⅓ to 50 per cent.

The club started full-scale operations May 1 and Carpenter has guaranteed its members that he will continue it until May 1, 1947. After that he proposes to

(*Continued on page* 96)

Extensive repair facilities help cut club costs, make cheaper flying rates possible.

Lightplane Radio Review

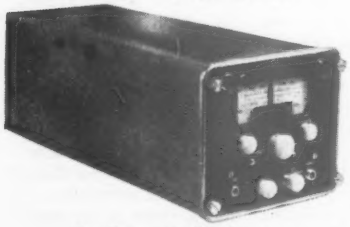
BEFORE very long, many authorities believe, airplanes will not be allowed to fly cross-country or approach an airport without a radio. Most plane owners realize the importance of radio but the additional weight and cost often cause them to get along without it. On these pages FLYING presents the results of a survey of radio manufacturers who build aircraft sets costing under $300. Most sets cover both radio range and broadcast bands. Radio ranges use 200 to 400 kc. frequencies. The broadcast bands are those frequencies used by commercial radio stations for entertainment. If the receiver has a loop, the pilot can "home" on range or broadcast stations. There are a few VHF transmitters but no VFH receivers have as yet been announced.

AIRADIO, INC.

Two-Way

This company builds both a transmitter and receiver. Only the receiver is shown. Receiver has a built-in range filter. Interphone operation is possible. It operates with a loop but an antenna switch must be installed. It will receive both radio range and broadcast bands. Transmitter operates on 3,105 kc. at 10 watts output. Power needed is 12 volts, weight is under 11 pounds. **PRICE: $185**

BELMONT RADIO CORP.



Raytheon Radiophone

Transceiver is contained in one case and uses 12 volts of power obtained from the airplane's battery. Total weight is 14 pounds. Receiver tunes radio range and broadcast bands and will operate with a loop antenna. Transmitter works on 3,105 kc. A neon bulb on radio control panel indicates amount of radiation and modulation. Set has two vibrators for high voltage source but will operate on one in case of failure of other. Headsets, microphone and other necessary accessories are extra. **PRICE: $149.50**

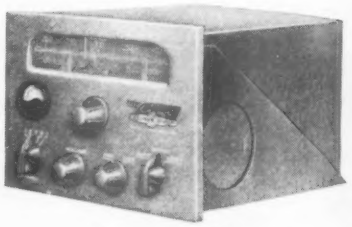
BENDIX RADIO CORP.

Bendix VHF Transmitter

VHF transmitter is engineered for five different broadcasting channels on five different frequencies. However, at present only two crystal-controlled frequencies (131.7 and 131.9 mc.) are used. Total weight of the transmitter is 2½ pounds. It will operate on either a 12- or 24-volt electric power source. This price does not include either microphone or external wiring. **PRICE: $115**

Bendix Receiver

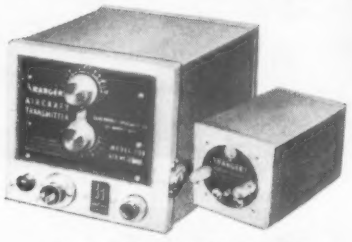
Receiver is a companion unit for the VHF transmitter described above. It can be installed easily in the airplane's dashboard and will operate from a 12- or 24-volt electrical supply. This receiver has been designed to operate with a Bendix directional loop antenna ($29 extra) and it will receive both radio range and broadcast stations. The total weight is about five pounds. Headsets are extra. Set has a built-in range filter. **PRICE: $110**



Bendix Flightphone

A transceiver, this unit combines both the VHF transmitter and receiver described above in one unit. The high voltage power supply also is in the case. Crystals, microphone and headsets are extra. Weight is seven pounds. **PRICE: $165**

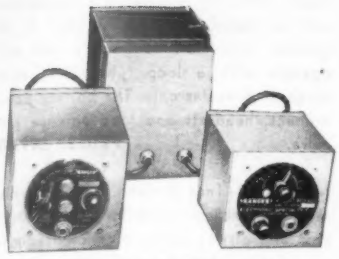
ELECTRONIC SPECIALTY CO.



Ranger Models 209 and 115

Model 209 (left) is a self-contained transmitter which can be remotely installed in the airplane and operated from the pilot's position. It uses a fixed-wire antenna and needs no tuning after initial installation. As delivered, the transmitter works on 6,210 kc. but will broadcast on any frequency from 1,500 to 14,000 kc. Weight is a little over 13 pounds. Uses a 12-volt power source. The microphone is extra. **PRICE: $180**

Model 116 receiver (right) is a companion unit to the Model 209 transmitter and weighs under three pounds. It operates on the radio-range frequencies only. Power for the receiver is obtained from the transmitter. A range filter circuit is included. Headsets are extra. **PRICE: $70**

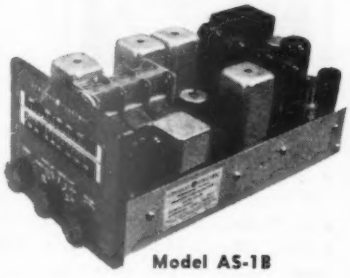


Ranger Models 210 and 117

No generator or other aircraft electrical system is needed for this Model 210 transmitter which operates from a battery pack. Weight is under two pounds. It transmits on 6,210 kc. A selector switch makes possible operation on either a fixed-wire or trailing antenna without retuning. The battery pack and microphone are extra. **PRICE: $52.50**

Receiver (Model 117), a companion unit to transmitter described above, will operate from transmitter's batteries or a separate battery pack. Total weight of receiver and batteries is under five pounds. Receives only radio range band. Headsets are extra. **PRICE: $49.50**

GENERAL ELECTRIC



Model AS-1B

Transceiver is in two units—transceiver and high voltage power supply. Total weight is 12 pounds. Receives radio range and broadcast bands and can be used with a loop. Range filter and interphone circuits are included. Transmits on 3,105 kc. Set uses 12 volts from airplane's electrical system. Headsets and microphones are extra. **PRICE: Under $200**

HALLICRAFTERS CO.

Skyfone C-2

Transceiver is in two units, power supply and transceiver. It operates from a 12-volt D.C. source. A master function switch controls selection of either range or broadcast bands, 278 kc. for control tower reception, three-way range filter and loop operation. Total weight is under 12 pounds. Microphone and headsets are extra. **PRICE: $129.50**

HARVEY-WELLS

Transmitter AT-3B

Transceiver ATR-3

Transmitter (left) has 10 to 12 watts output. It operates on either six or 12 volts. Weight is 9½ pounds. Antenna and microphone are extra. **PRICE: $74.50**

Transceiver, weighing 12½ pounds, receives radio range and broadcast bands. It has a range filter. Microphone and headsets are extra. **PRICE: $129.50**

HEATH CO.

HBR-5

Receiver operates from dry batteries and receives radio range band. Also operates with loop ($39.50 extra). Batteries and headsets are extra. **PRICE: $39.50**

HT-4

A companion unit to the HBR-5, this transmitter is crystal-controlled on 3,105 kc. It has provision for addition of another crystal frequency if desired. Microphone, antenna reel and power supply unit are included in price. The weight of this transmitter with receiver is over 25 pounds. **PRICE: $129.50**

LEAR INC.

Learavian Portable

Receiver can be used in or out of airplane. It receives radio range, broadcast and airline communications bands, has a built-in loop antenna and loud speaker. It will operate with fixed antenna and headsets if desired. Weight is over 14 pounds. **PRICE: $59.50**

PXer (TR-1B)

Transceiver receives only radio range and broadcasts on 3,105 kc. Total weight of set is 15 pounds. Receiver will operate with a loop. Headsets and microphone are included. **PRICE: $125**

PXer (TR-2B)

This is a more elaborate and more powerful version of Model TR-1B. Transmitter output is 12 watts. It receives radio range and broadcast bands. Total weight is 12 pounds. Microphone and headsets are included in price. **PRICE: $150**

MAGUIRE INDUSTRIES

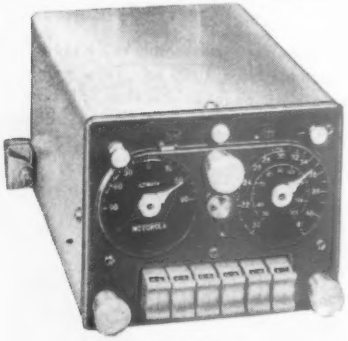
Transmitter

Set can be operated remotely by control panel mounted in cockpit. Broadcasts on 3,105 kc. Weight is under 11 pounds, microphone is extra. **PRICE: $69**

Receiver

Receives radio range only. Weight, including self-contained batteries, is under four pounds. Has range filter and will not operate with a loop. The headsets are extra. **PRICE: $29**

GALVIN MANUFACTURING CO.



Motorola Avigator

Self-contained, transceiver weighs 13 pounds. It operates on a 12-volt source and receives radio range and broadcast bands. It has a handy push-button tuning device to simplify range or loop flying and a 75 mc. marker beacon receiver. A loop, trailing-wire and fixed-wire antennas are furnished. Transmitter has 10-watt output. Dial indicates direction of loop antenna. Two headsets and two microphones and all wiring are furnished with the set. **PRICE: $263.50**

Motorola Airboy, Sr.

Portable, this transceiver has a range of 25 miles. Total weight is 7½ pounds. It operates from batteries and transmits on 6,210 kc. Headsets, batteries and microphone included. **PRICE: $79.95**

Motorola Airboy

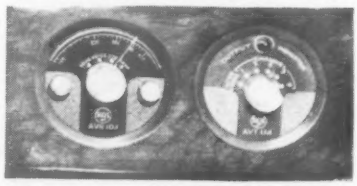
This unit is one of the lightest battery-operated portable units (four pounds) for aircraft. Receives radio range only. Headsets are extra. **PRICE: $31**

PHILCO CORP.

Model AC 7-200

Transmitter, receiver and high voltage supply are in one case, weighing 10 pounds. It receives radio range and broadcast bands. Transmitter operates on either 3,105 or 6,210 kc. at seven watts output. Price includes headsets and microphones. **PRICE: $119.50**

RADIO CORPORATION OF AMERICA



RCA Models AVR-104 and AVT-114

Model AVT-114 is a five-channel VHF transmitter. One crystal for one frequency is supplied (131.7 mc.). It uses six-, 12- or 24-volt power source and interphone operation may be had in the sixth position of channel selector switch. Dial only shown. **PRICE: Under $200**

Model AVR-104 receiver is a companion unit to Model AVT-114. Weight is 10 pounds. Set has a range filter and will operate with a loop. Receives radio range frequencies only. The battery power pack, headsets and loop antenna are extra. **PRICE: $99.50**

Model 109 (not shown) is a portable receiver which tunes radio range, broadcast and airway communication frequencies. It operates from self-contained batteries or 110-volt house current. It has a built-in loud speaker. Weight is under 14 pounds. **PRICE: Under $50**

REX BASSETT INC.

Models MC-6A and MC-6B

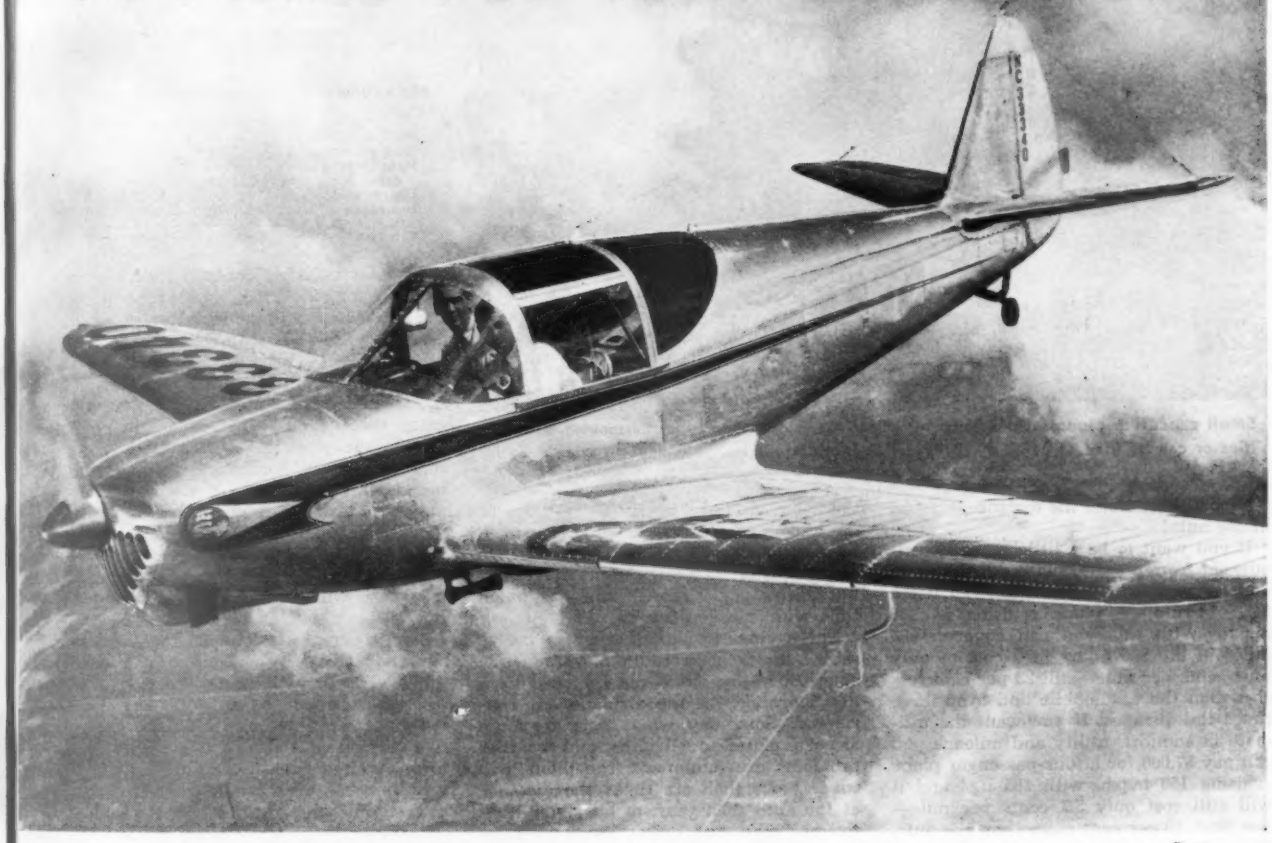
A dry-battery-operated transceiver, this unit receives radio range frequencies only. Transmitter output is 1.5 watts on 3,105 kc. Weight of this set is 12 pounds. Loop, headsets and microphone are extra. **PRICE: $124.50**

Model MC-6B is basically the same as Model MC-6A except that it operates from the aircraft's 12-volt power system. Weight is 3½ pounds. Output of transmitter is 10 watts on 3,105 kc. Headsets and microphone are extra. **PRICE: $177**

Model MR-3A

Receiver is dry-battery operated, tunes radio range only and will operate with a loop. Weight is 2½ pounds. Batteries and headsets are extra. **PRICE: $54.50**

A Plane For Your Business?



Salesman in 125-h.p. Globe Swift would cover as much territory in a year as would 2½ men traveling in automobiles.

Of course—but only if you use it enough.
It will save you time, money and manpower.

By
NEIL B. BERBOTH

Staff member of Fairchild Engine and Airplane Corp.'s Development Division, the author is an expert on plane-operating costs.

WHAT about a plane in your business? Is it cheaper than an automobile? Can it save you money? The answer to all these questions is yes—if you can use it enough.

Executive planes are faster and can be much cheaper than any other form of transportation. Their speed not only can be translated into more intensive coverage of a sales territory, but into fewer men needed to do the same job.

For a commercial traveler the important expense consideration is cost per mile. A faster airplane usually will prove most efficient in work accomplished and in cost. The selling price of the plane, within reasonable limits, ordinarily will have little effect on per mile costs

The Automobile Manufacturers Association estimates that the average U. S. commercial traveler covers 15,025 miles of business driving per year—which is 525 hours driving time. A medium-priced 100-h.p. car will cost about 5.2 cents per mile to operate under these travelling conditions.

Before showing what a plane can do in this field, let's be practical and assume existing limitations. Weather hinders our flying. Airports may be inconveniently located. So let's assume that ⅓ of our average salesman's 525 hours transportation time is spent waiting on the weather and/or getting to and from airports. Let's further increase our cruising speed 15 per cent to adjust for straight-line distances, then knock off 12 m.p.h. to allow for maneuvering, taxiing and built-in headwinds.

Under these conditions a small two-passenger plane costing $3,000, cruising at 110 m.p.h. and with 300 pounds allowance for baggage, samples or another person will cost 3.7 cents per mile to operate—29 per cent less than the automobile! And further, in its 350 hours of usable transportation time, it will cover 40,000 miles

Small executive plane such as North American Navion can carry four persons on business trips or can be used to carry a half ton of high-priority cargo. Per-mile costs are cheap.

—almost three times the distance covered in the auto!

If you want to be a little more luxurious, get from place to place a little faster and travel a little farther you can use a $4,000 two-place plane cruising at 135 m.p.h. With this you can cover 50,000 miles in the 350 hours at a cost of only four cents per mile—still 23 per cent less cost than the automobile and over three times the distance. If you want the ultimate in comfort, utility and mileage you can pay $7,000 for a four-passenger plane cruising 150 m.p.h. with 185 h.p. and it will still cost only 5.7 cents per mile—less than 10 per cent more than the auto. With this plane you can carry business friends and prospects and your trips will take less time. You'll also cover more mileage, 56,500 miles to be exact, so for many cases the extra ½ cent per mile will be found well worth the slight additional cost.

Let's take the smaller plane that costs 3.7 cents per mile to operate, and see what it means to an aggressive, farseeing sales executive. He can cover nearly three times as much territory and thus do nearly three times as much annual business with the same number of salesmen at a lower per-mile cost. Or he can cover the same territory nearly three times as often each year and develop his business more intensively. Or he can cover the same territory with the same frequency but spend almost three times as much time with each customer.

The savings by use of the airplane as shown in the next column are remarkable, especially when the limitations on the operations of the airplane are considered. Some day, when there are more airports closer to all cities and weather problems are minimized, the plane will cover more than six times the distance as the auto each year, at *less than ½ of the per mile cost,* even though its sales price may be two or three times as high. Even if $1,200 annual expense is added to each of the airplane salesmen costs shown to allow for ground transportation to and from airports, the cost of covering the territory would still be only about half that incurred if the company were using automobiles.

For the newly-established business concerned with costs versus productive sales effort, the lightplane is also more efficient. The same territory can be covered at considerably less cost each year and with nearly ⅔ less personnel. As an example, let's take a small firm operating in a fairly large territory requiring 75,000 to 80,000 miles of transportation per year.

AIRPLANE	AUTOMOBILE
80,000 miles per year	75,000 miles per year
2 salesmen @ $4,000 each per year	5 salesmen @ $4,000 each per year
2 airplanes costing $1,483 each to own and operate per year	5 automobiles costing $787 each to own and operate per year
Total cost to cover 80,000 miles per year —$10,966. (13.7 cents per mile)	**Total cost to cover 75,000 miles per year —$23,935. (31.9 cents per mile)**
Total capital investment in planes @ $3,000 each—$6,000	Total capital investment in automobiles @ $1,265 each —$6,325

BREAKDOWN OF TOTAL OPERATING COST

	Two Airplanes	Five Automobiles
Fuel and oil	$1,012.00	$1,525.00
Maintenance	558.00	470.00
Hangar or garage expense	360.00	600.00
Depreciation	810.00	1,075.00
Insurance	226.00	265.00
	$2,966.00	$3,935.00

For the business concern desiring an airplane for executive transport purposes the most important cost factor is again cost per mile—but with several new factors introduced. First of all, the executive owner in the smaller transport class in most cases will require a plane that will carry three or four passengers in addition to the pilot. He will want a plane that is especially comfortable and that has a long operating range and reasonably high cruising speeds. On many trips it will be competing with fast airline service.

From the cost standpoint, the executive transport will be competing with airline rates which at present are around 4.8 cents per passenger mile for an average executive trip of approximately 400 miles. The private plane, however, will have the tremendous advantage of flexibility. It can leave any time the executive wishes and it can operate to any town or city which has an airport. This is an important advantage when it is considered that the airlines now serve less than 10 per cent of all cities having airport facilities.

The executive airplane also can be more utilitarian than the lightplane in that it will generally be operated by an experienced commercial pilot and should complete a higher percentage of trips. Then, too, the use of a twin-engined plane more often will make possible night and instrument flying.

The problem of utilization is the key. The executive-owner transport should be utilized at least 1,000 hours per year if a business firm is to obtain its full potential economy and utility. That is from 100,000 to 185,000 miles of transportation annually.

Let's take as an example a modern four-passenger airplane that cruises at 150 m.p.h., has a 185-h.p. engine, and costs $7,000 to buy. We'll assume 1,000 hours annual utilization—that's 161,000 miles in round figures—and add into the costs $5,000 annually for a pilot in addition to fuel and oil, maintenance, hangar rental, depreciation and complete insurance covering all flight and ground risks.

Under the above conditions the cost of owning and operating the airplane, in-

(*Continued on page 72*)

PRIVATE PLANE VS. PUBLIC TRANSPORTATION

(Comparative costs and times for a 400-mile trip)

Passengers To Be Carried	4-place Single-Engined Plane $7,000		5-place Twin-Engined Plane $30,000		Present Airline Average (App.)		First Class Express Train Average (App.)	
	Cost	Time	Cost	Time	Cost	Time	Cost	Time
One passenger..	$30.00	2:45	$47.65	2:00	$19.20	3:05	$18.40	8:00
Two passengers.	30.00	2:45	47.65	2:00	38.40	3:05	36.80	8:00
Three passengers	30.00	2:45	47.65	2:00	57.60	3:05	55.20	8:00
Four passengers.	.....	.....	47.65	2:00	76.80	3:05	73.60	8:00

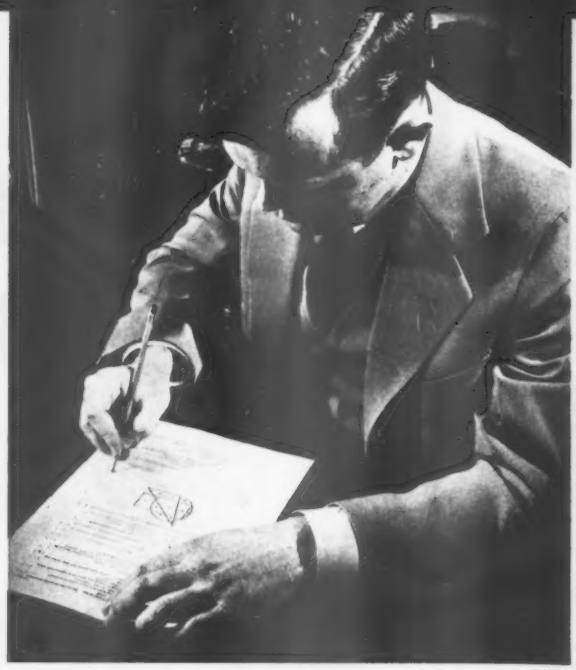
Converted Aces

First Officer Gus Connery (right) walks toward American Airlines DC-3 for his first flight as a co-pilot. The other members of the crew are Capt. Howard Pember and Stewardess Evelyn Holzworth.

Ex-bomber pilot Gus Connery learns to fly with the airlines.

Continued on next page

Applying for job with airline, Gus Connery (in gray suit) fills out an application. As his qualifications seemed good, he was given interview.



Mental test for airline pilot candidates is pencil-and-paper race against time. The passing grade is 75 per cent.

By JOHN J. DOHONEY

AUGUSTUS CONNERY of Providence, R. I., is one of those ex-Army pilots who is undergoing civil airlines reconversion. Gus flew 420 combat hours in *Liberators* and received assorted awards to prove his competence as a bomber pilot. He can wear the Distinguished Flying Cross with one cluster, the Soldier's Medal, and the Air Medal with one cluster.

His part of the war was pretty rugged but Gus, with hundreds of other ex-service pilots, is finding that learning to fly the airlines way is also pretty rugged—though in a different way. These pilots have to relearn a lot of basic procedure. Things are done differently in the airlines. The point of view is different, too; airline flying is smooth, fast, and, above all, safe. It's a little tough, sometimes, for a man who was responsible for bringing his crew back through flak and strafing planes to have to ride the co-pilot's seat and take orders from an airline captain who wouldn't touch a bomber with a 10-foot pole. There are a lot of other things, too, which gripe ex-service pilots and which we'll come to as we continue. They are all strictly hazards of reconversion.

Gus Connery joined the Army Air Forces in 1941. In August, 1945, Gus was again a civilian. Pan American was looking for an experienced pilot to fly transatlantic runs under its contract operations and Gus took the job. Shortly after the first of this year, though, Gus decided to change. He quit PAA and enrolled in American Airlines' pilot school.

There is a vast pool of former service pilots from which the airlines can draw. There are many good men to pick from—many more, in fact, than the airlines can ever hire. So the lines are plenty choosy and their tests are tough. Like other applicants, Gus first was given a mental test. Trained interviewers added their findings to the test's results. Doctors and their assistants checked on his physical condition. A good many applicants are weeded out in this

AUGUSTUS CONNERY, EX-AAF PILOT

Augustus Connery learned to fly in 1941 as a cadet in the AAF. Then, for almost 2½ years, he instructed other cadets. In 1943 he was sent to Australia where as a deputy group commander and a major he flew the Liberator "Gus's Bus II" on 44 missions against the Japanese. Returned to the States, he left the service. Applying to American Airlines for a flying job, he was accepted and enrolled in the company's co-pilot's school.

Weather procedures of airline differ from AAF's. Gus has the North American synoptic chart explained by meteorologist.

Airline Surgeon Dr. W. L. Renne checks Gus's blood pressure. Pilots undergo both airline and CAA physical. The airline's test is tougher.

Cockpit familiarization is given by Central Division Chief Pilot Fred Bailey. Gus, who flew Liberators and Skytrains in Army, finds airline's procedure different. As student he is paid $190 a month. Co-pilot's starting salary is $220 a month.

Link trainer time is logged by all students. Instructor explains airliner's instruments from full-scaled mock-up.

Question and answer sessions are held between Chief Pilot Bailey and students. Trainees have average of 1,500 flying hours. Pilot Bailey has 8,500 hours.

Planning first flight with Captain Pember, Gus Connery estimates ground speed of Chicago to New York trip. Planning takes one hour. Pilot and co-pilot carry watches, maps, engine and radio data, sunglasses, flashlights, blind flying charts.

preliminary stage because the mental test requires a passing grade of 75 per cent and the physical test must be virtually perfect. Those who are finally selected are sent to a training base where their former rank means nothing.

Gus, with a few fellow trainees, was sent to American Airlines' training base, then at New York. Here the first order of business was a lecture by an experienced pilot who gave it to the boys straight from the shoulder. It all boiled down to the fact that "you boys did a fine job in service but from now on out there's a new and different kind of job to be done. So hop to it fellows but remember, you all start from scratch."

In the similar schools that other airlines are running across the nation, ground school usually *(Continued on page 94)*

the MONTH'S BEST

Tight Turn

Meteor

Meteor

Heavyweight

REPORT FROM WASHINGTON

By FRED HAMLIN

PLANE BARGAINS appear in the news and the ads regularly these days, especially from Federal surplus sources, and it is no reflection on either the seller or the buyer for us to offer a few background facts on the business. Here, in general, are some of the danger signals flashed to prospective plane owners from aircraft and engine manufacturers, bargain plane owners, and dispensers of the Federal surpluses.

Take Federal surpluses. A few weeks back, for instance, an entire lot of 358 Stinson AT-19s was purchased by veterans at Norfolk, Va., where between 1,100 and 1,200 veterans showed up for the sale. The planes had been shipped back from English lend-lease surplus. They went on sale, their fuselages crated, at from $1,500 to $2,500, depending on their condition. On the face of it, at least at the $1,500 figure, they were bargains. . . . But there were a lot of disappointed buyers. Despite warnings from the War Assets Administration that buyers must risk getting planes in poor condition, many of the boys found that shipping damages were greater than had appeared upon first inspection. WAA also warned that purchasers buying fuselages only might have difficulty getting wings, which turned out to be the case, again disappointing the buyer. Still others found that the planes had no back seat, no upholstering, and that repairs and assembly costs were higher than anticipated.

Equally disgruntled reports come in from many buyers who pick up planes from fixed-base operators. In each case, manufacturers and even sellers were as unhappy about the situation as the buyers of the planes. Neither likes the prospect of an industry laden with dissatisfied customers.

We asked what purchasers should do about it, and here is what we were told:

1. Don't buy a plane if you're not going to use it. Fixed overhead goes merrily on regardless of whether you use your plane—and if you use it seldom, the rate-per-hour of flying is proportionally higher.

2. Be sure you can afford to pay for the maintenance after you have met the original cost.

3. Make sure spare parts are available. Many of the war-time bargains are not being built now, and spare parts are vanishing rapidly.

4. Check the engine—a good mechanic will go over it for as little as $10, and if he tells you not to buy after the check-up it's worth that many times over in money saved.

5. If the plane is a military job, find out if it will meet CAA requirements for an NC license; if not, find out how much it is going to cost to convert.

6. If any work has to be done on the plane to make it airworthy, get a *written* estimate from some reliable mechanic.

7. Don't buy a bargain that will make you insurance-poor. A $30,000 surplus job cannot be insured for the $2,500 you paid for it, owing to the high cost of replacement in case of damage. . . . Note of optimism: figures aren't in yet but a survey now being made seems to point toward the conclusion that the post-war turnover in plane ownership is less than it was before the war, which means that a lot of guys are buying successfully and enjoying what they get. Hope you do, too.

Propless P-51

We hear that Jim Nissen, now test pilot at North American Aviation, did an interesting job back in 1943. . . . NACA scientists were wondering how airfoils reacted at high speeds without the propeller blast. So Jim had himself towed

Surplus planes like these are priced low, but not all are bargains, warns the WAA.

in a propless *Mustang* to 28,000 feet over Muroc Dry Lake by a *Black Widow*. Then he cut loose and dived. . . . He hit 580 m.p.h., pulling out at 5,000 feet. Only thing wrong with the test was that after Jim pulled out, the propless plane wouldn't slow down. For what seemed a hundred years it maintained a speed of 515 m.p.h.

Park Peeve

For the first time in half a decade you may vacation-fly to any or all of the 25 national parks in Continental U.S.—but don't expect to be welcomed with open arms. The U.S. National Park Service is allergic to the airplane, either in the air over park domains, or on a park lake (of which there are hundreds) or on a park airfield (only a few). Park Service advice to the private flyer is similar to that of the old lady to her darling daughter—hangar your plane at the nearest field, but don't fly over the parks. . . . "The national parks," says Newton B. Drury of Chicago, who is their director, "are not the places in which to experiment with new developments in transportation. It is obvious that the construction of landing fields and auxiliary buildings would intrude upon park scenery and that the noise and confusion of airplanes would disturb the native wildlife and would tend to destroy the character of these great areas as nature sanctuaries." Will there be airports in national parks in the future? "When aircraft construction and use are stabilized," says Mr. Drury, "our present policy will be reviewed."

Don't Go Near the Water

The Service's drive against water landings is currently the most active. A year ago here in Washington (not notable as a nature sanctuary), one Palmer C. Scarneccia, an airway traffic controller at Washington National Airport, hit upon the idea of establishing a couple of seaplane bases in the Potomac river. He received support for the idea from CAA, Army, and Navy, all eager to divert traffic from the big fields. Scarneccia proposed one base near Alexandria, below National, another up the river at Georgetown. Despite protests that he has no record of a traffic accident between a lightplane and a water-born vehicle, he has been opposed by National Park Service on the grounds that lives of canoers will be endangered. Last word is that he has received permission to land *one* seaplane at Alexandria, but the privilege may be withdrawn at any time. . . . Similarly, although there are hundreds of lakes in the national parks, none of which, according to CAA, has either been posted or listed against floatplane landings in the Airman's Guide, park officials "discourage" such landings.

Low-Flying Ban

Another thing the National Park Service doesn't like is low-flying over the parks. The Service has recommended to CAA that planes be made to keep at least a 2,000-foot altitude. CAA, which permits even hedge-hopping these days so long as you do not endanger human life or property on the ground, looks upon this with jaundiced eye. As we go to press, pressure from the Service has become so strong that the Administration has agreed to a rule providing a 1,000-foot ceiling. . . . Even more jaundiced about the whole idea are sportsmen pilots, from whom a test case may be expected once an attempt is made to enforce the 1,000-foot rule. The summer also may see similar tests regarding water landings. Lightplane enthusiasts recall the traditional attitude of the Service toward modern vehicles—in the early days of the automobile, you had to leave it outside the parks and sightsee in a stagecoach. "Mr. Drury's wild life, like grandpa's horse, will take the airplane as calmly as the

(*Continued on page* 88)

Forgotten Pioneer

A California school teacher flew eight years before Lilienthal, 20 years before the Wrights.

THE Wright brothers still have secure claim to making the first flights in a powered airplane, but another American, a Californian, was the first to fly in a heavier-than-air craft, according to available evidence.

He was John Joseph Montgomery who, in August, 1883—20 years before the Wrights hauled their plane to the dunes of Kitty Hawk—soared a distance of 602 feet in a glider. To Montgomery falls belatedly the honor of being the first man to fly in a heavier-than-air craft. Not until eight years later did the German, Otto Lilienthal, make the flights which earned him the title—now questioned—of the world's first heavier-than-air pilot.

Montgomery, like other early birdmen, wasn't flying only for thrills. He was a scientist and had the scientist's overwhelming desire to learn the secrets of flight.

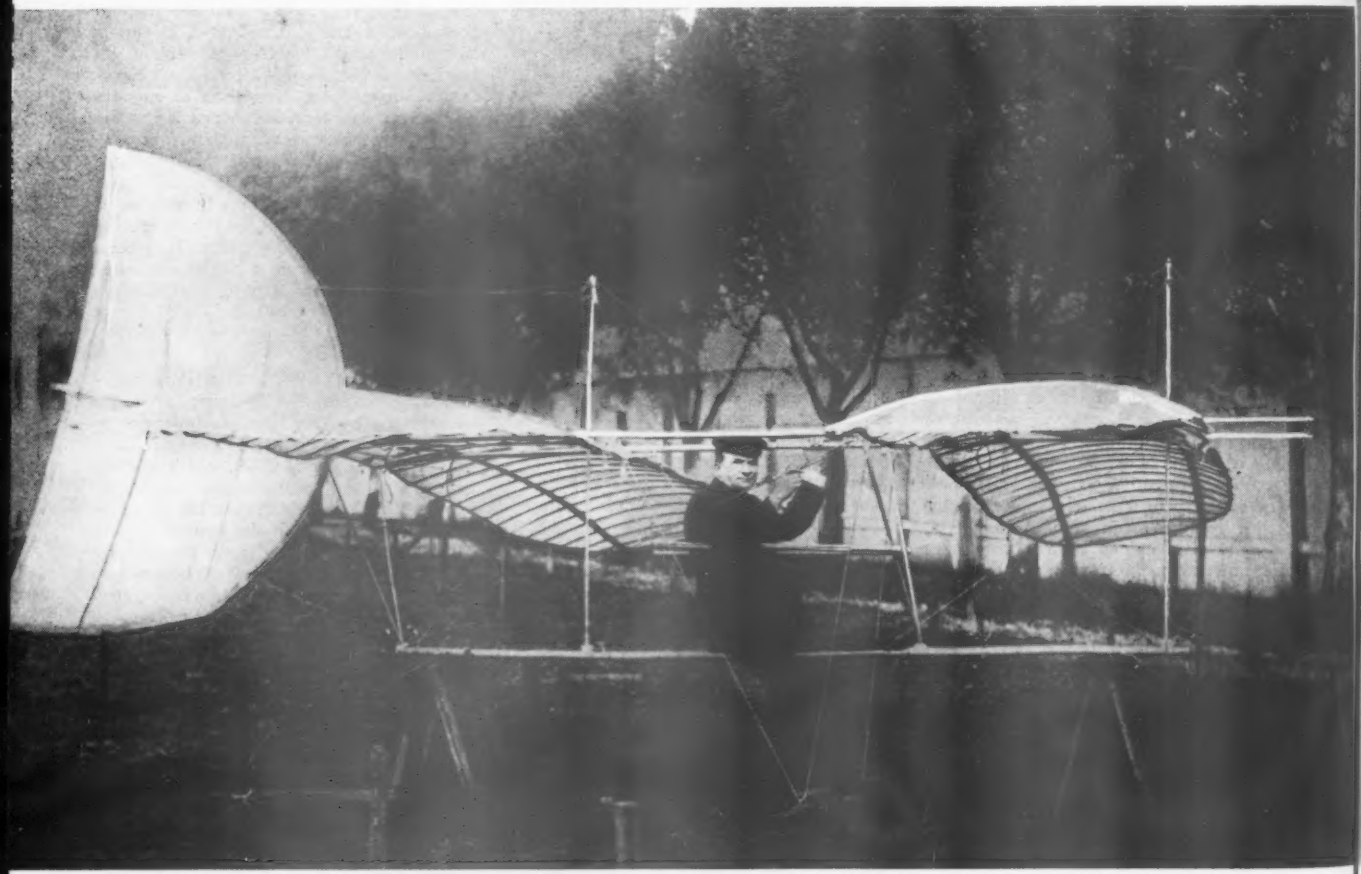
Born in Yuba City, Calif., on February 15, 1858, Montgomery was trained to be a lawyer. He was graduated from St. Ignatius College (now the University of San Francisco) and entered the law profession. He failed. He tried storekeeping and failed again.

John Montgomery always had wanted to study the secrets of flight. The opportunity came with the closing of his store. He moved to the family ranch near San Diego and began to study.

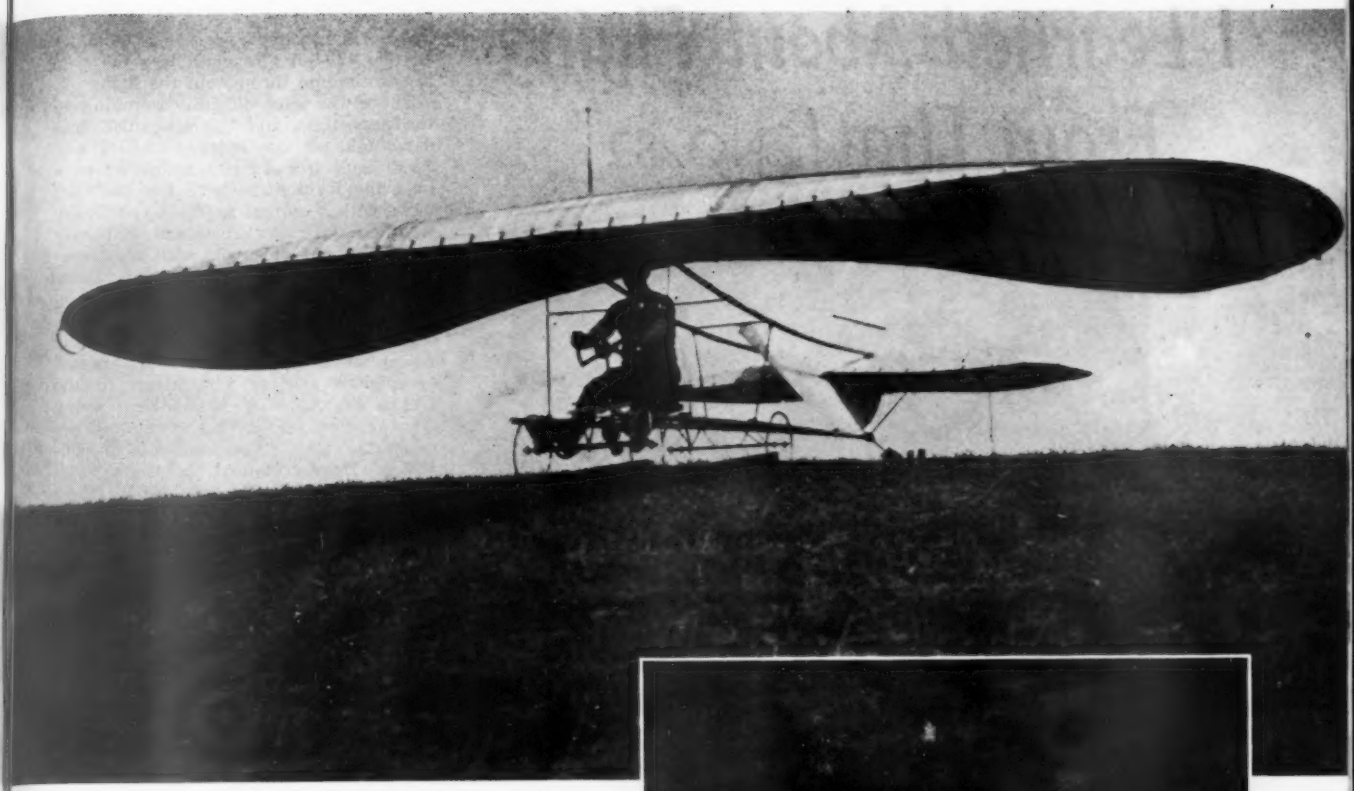
In his workshop on the rolling hills of the ranch he studied the flight of birds. He captured them and studied the structure of their wings. He tried to build an ornithopter with flapping wings and, like two others which followed, it failed.

Montgomery had noticed one thing about birds' wings, however. They were all curved. Was there something in the curve of a bird's wing? Perhaps a wing does not have to move to maintain lift. Why not try it out, anyway?

For days the ranch workshop buzzed with activity. John, ney, built the framework. His sisters cut and sewed the fabric then 25, and his younger brother Jim, now a West Coast attorto the wings. The materials were sim- (*Continued on page* 82)

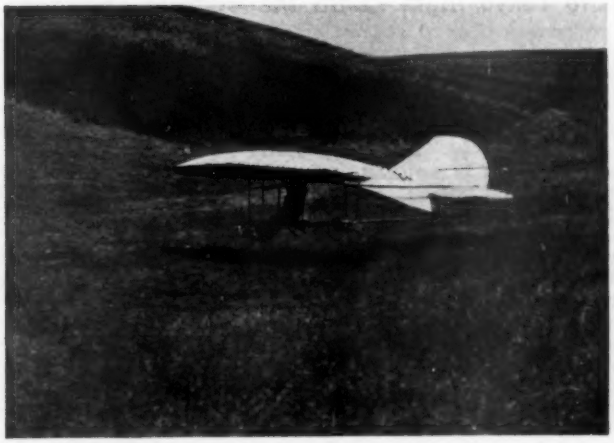


John Joseph Montgomery sits in the open-air "cockpit" of a tandem-winged glider he built in 1905 at Santa Clara University. The glider had flexible horizontal tail surface controlled by a rope. Wing warping gave aileron control.



Flight test photographs taken in 1911 show flights made by the glider in which Montgomery later was killed. Top picture shows take-off down a ramp. Center, glider in full flight.

Hot air balloon hauled Carnival Parachutist Dan Maloney in a Montgomery glider (also see page 52) to 4,000 feet. Maloney flew eight-mile course during glider's descent.



Landing, glider flew into ground and bounced along on its four wheels. Metal tubing was used in this glider for bracing.

I Learned About Flying From That! NO. 82

Author, now a civilian, stands in front of Stinson Reliant.

By CHARLES C. GILBERT

He thought everything was under control on that Manila to Tokyo flight – until the weather changed his mind.

I USED to think that the successful completion of any flight depended upon the skill of the pilot. That belief nearly cost the lives of 15 people, including my own.

I had made the flight between Tokyo and Manila many times during the months I was stationed in Japan. In spite of the 2,000 miles of water separating the two cities, I had come to look upon the trip as routine. The Ryukyu Islands are located exactly half-way between the two terminals, and Okinawa, with its numerous airfields, is almost directly on course. An airplane is never more than 250 miles from land at any point along the route. This is an unusual as well as a comforting situation in over-water flying and it is customary for four-engined equipment to make the flight in one hop.

This particular flight was from Manila to Tokyo last March. The airplane was a B-17G converted to passenger carrying and would accommodate 15 people.

In anticipation of a non-stop flight to Tokyo I had the plane gassed to 2,700 gallons—ample fuel for the 10-hour trip, plus a four-hour reserve at normal cruising consumption.

Except for head winds, the weather report was favorable. The map was unusually free from those multicolored diagrams which I secretly believe are designed by weather forecasters to frighten pilots away from flying anywhere at any time. At any rate, weather forecasting is never much of a problem on this route because the strategic position of Okinawa enables the pilot to get late reports on his destination throughout the flight.

There was some difficulty rounding up the passengers and the scheduled predawn take-off was delayed until 9 a.m. As a result, it was 2 p.m. before we were over the Ryukyus, where I called Okinawa with a request for the latest Tokyo weather. Okinawa answered that they had been out of touch with the Japanese homeland for 24 hours. Their latest weather was obsolete. I had been expecting this to happen for some time. The redeployment program had made nearly all the skilled radio operators and technicians eligible for return to the United States. The once-efficient Army Airways Communications System had degenerated into a vast network of confusion. Hastily trained men, newly arrived from the States, were doing their best to operate and maintain this important component of the Air Forces but were unable to process the tremendous volume of messages that were now backlogged throughout the entire Pacific.

Had the forecast from Manila been anything less than excellent, I would have landed at Okinawa rather than attempt a night approach to the Tokyo area in doubtful weather. As it was, I elected to continue the flight plan and advised Okinawa Radio of my estimated time of arrival at Atsugi Airport, Tokyo.

Five hours later we were in the middle of a blinding snow storm and had been pushed off course by a 70 m.p.h. crosswind. It had been dark for an hour and I was having considerable difficulty in raising the Atsugi tower. V.H.F. contact was finally made about 20 miles out and the tower's answer to my request for local weather was anything but favorable:

"Army 3411 from Atsugi tower, the Atsugi weather follows. Ceiling estimated 100 feet, visibility less than one mile. Surface wind north at 40 knots with strong gusts. Continous rain."

After a short pause, the tower operator added:

"Operations advises the field is closed."

It immediately became very lonesome in the cockpit. Misery loves company, I guess, for there was a certain amount of satisfaction in seeing Capt. Jim McMahon, my co-pilot, surreptitiously wipe the perspiration from his hands. I had already felt the sudden dampness on the wheel from my own moist palms. We both knew that the weather at the other three fields in the Tokyo area would be similar to that at the Atsugi strip. They were all clustered about the city within a radius of 20 miles.

The Atsugi operations officer evidently was thinking along the same lines for almost immediately the tower called back:

"Operations advises that all fields in the Tokyo area are closed."

We didn't have enough gas to make Okinawa but there were still four alternates within the range of our remaining fuel supply. I called the tower with a request for the weather at Osaka, Sendai, Kenoya and Iwo Jima. By this time

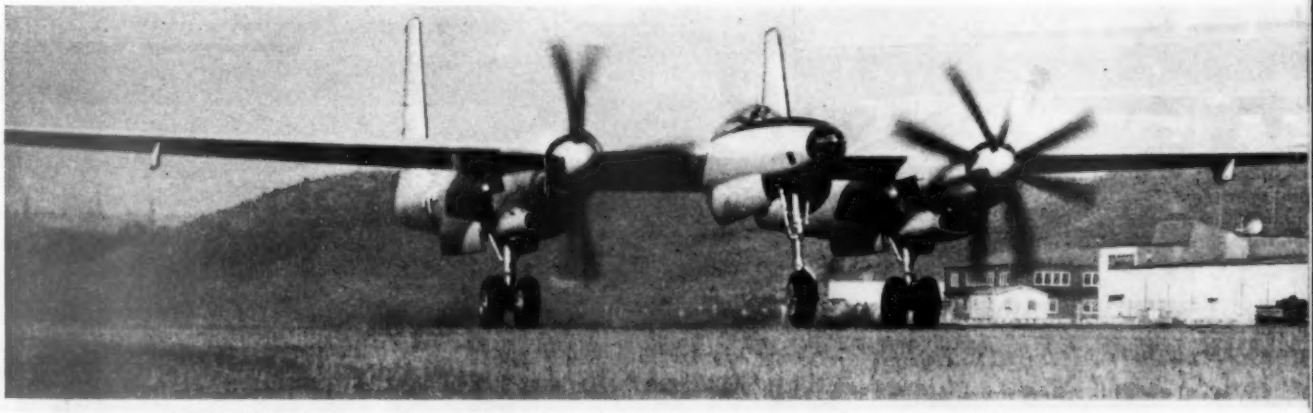
(*Continued on page* 91)

HAVE YOU SEEN?

Grumman Tigercat (F7F-3N) night fighters now are being fitted with a "droop snoot," elongated nose. The new addition houses the fighter's radar antenna. The Tigercat has two 2,200-h.p. engines, top speed of over 450 m.p.h. It weighs over 10 tons.

McWhirter Skyrider was made in Grand Rapids, Mich., as experimental 185-h.p. ambulance plane. Wings, fuselage are wooden.

Taylorcraft AAF glider, converted by San Leandro, Calif. firm, has 65-h.p. engine. It is two-place tandem trainer



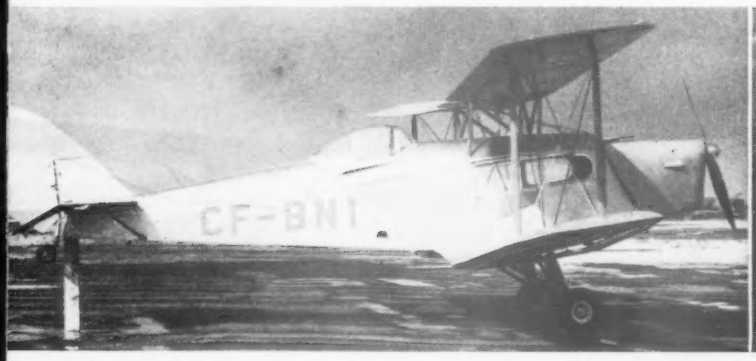
Hughes XF-11 is shown taxiing out to take off on flight that ended in a crash. The experimental AAF photo plane had two 3,000-h.p. engines and coaxial propellers. Wing span was 101 feet, gross weight 18 tons. Another will be built for tests.

HAVE YOU SEEN?

(Continued)

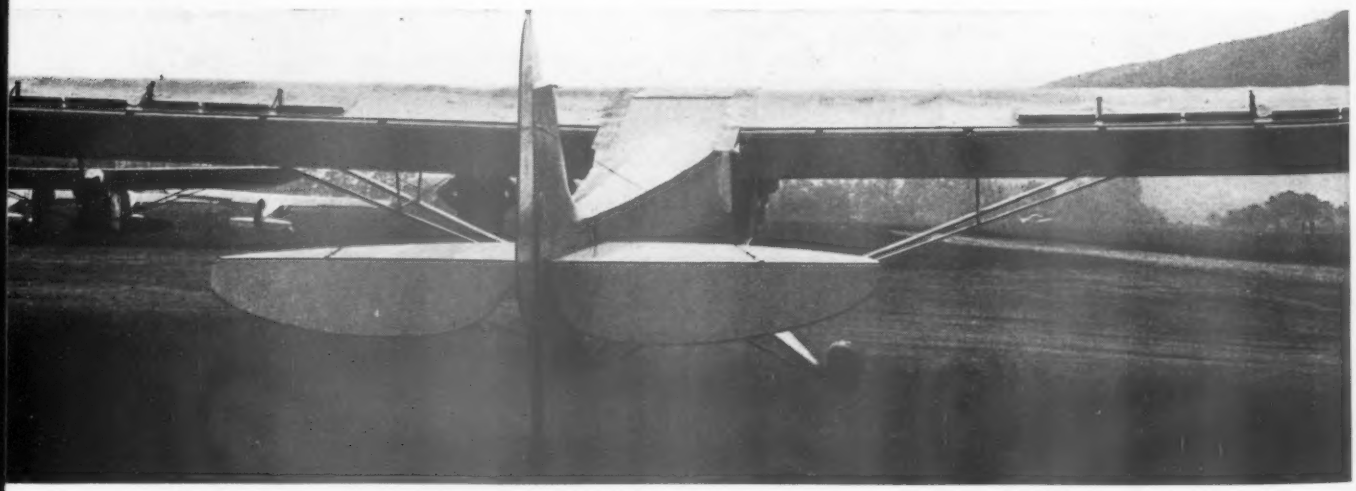
Duggar fixer combines readings from two radio compasses and remote flux gate compass into one dial. Crossed light beams show plane's position.

Vought V-173 is weird flying model of XF5U-1 high-low speed Navy fighter. Its two engines are buried in the wing.



DeHavilland Fox Moth is three-place Canadian biplane. Its 140-h.p. engine gives it top speed of 110 m.p.h., cruising 96 m.p.h. Cost at factory is $5,864.

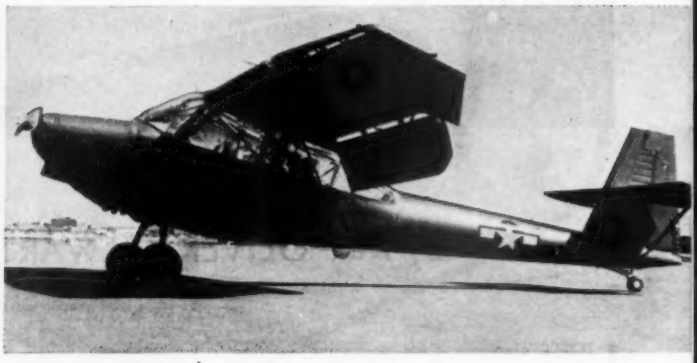
Chipmunk, newer DeHavilland two-place design, also has 140-h.p. engine, cruises at 130 m.p.h., stalls at 40 m.p.h.



Experimental Cub trainer has full-span flaps, spoilers, no ailerons. High tail post makes plane land and take off in flying position. This plane has excellent slow-speed performance, a steep glide path. No production plans have been made.

Bartlett Blue Zephyr is experimental lightplane built at Rosemead, Calif. Production model will have 150-h.p. engine and constant-speed propeller. Only other specifications given: it is two-place, mid-wing, made of fabric-covered tubing.

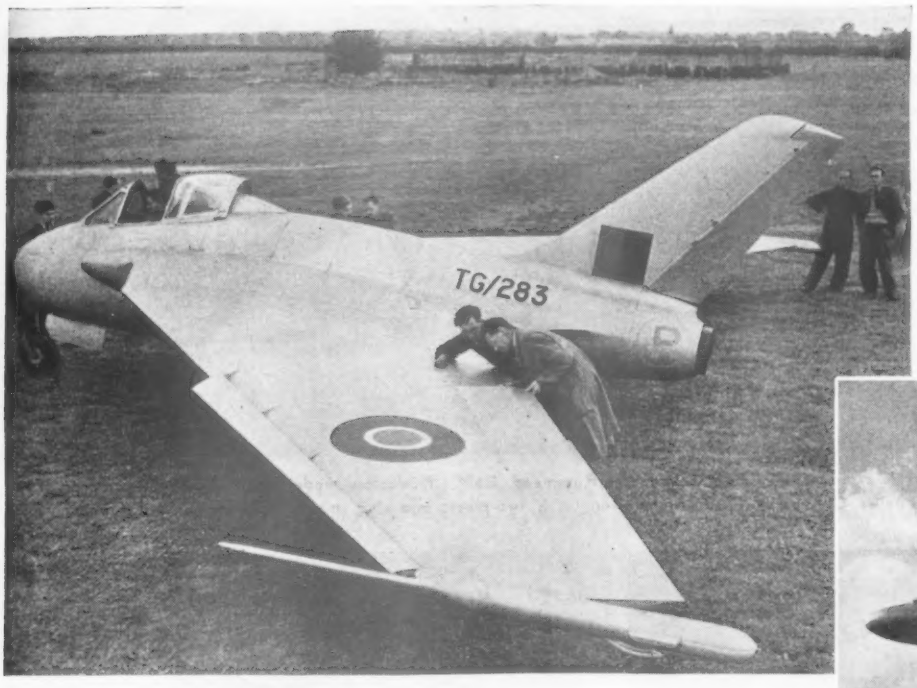
Decelerating harness of undrawn Nylon is being tested by Navy. Man shown above took 8,200-pound impact without injury.



Stinson XL-13 AAF liaison plane has 240-h.p. Franklin. Top speed is 115 m.p.h., stalling 40. Gross weight: 2,900 pounds.

Balky Cub is a trick plane used in Jess Bristow comedy air show. When the engine is started the fuselage sags and several control surfaces fly off. Mechanics "repair" plane; then Joan Broadhead, former WASP, uses it in comic flying act.

LONDON LETTER



De Havilland Swallow is new jet-powered British fighter of flying wing design. The wings are swept back at a 43° angle. This design strongly resembles that of the German rocket-powered Messerschmitt Viper (Me-163).

By Maj. OLIVER STEWART

British Authority, Editor of Aeronautics

LIGHT airplane club pageants, coming in the midst of so many massive and solemn international conferences, have been a welcome sign in Britain that aviation can still relax. They are also a sign that aviation can make a useful contribution to the minor peace-time amenities of civilization.

The United Services Flying Club, which is open to all past and present members of the fighting forces, was making its final preparations to entertain the public with displays of flying by low-powered civil aircraft at the time when jam-packed crowds in the streets of London were gaping up at a procession of 307 military aircraft, rushing past against a background of darkening rain clouds.

Other small flying pageants were also arranged for the week-end of the June victory celebrations.

Swallows

A new integration of wings, fuselage and tail is shown in the De Havilland 108 *Swallow*. But the Germans were first in the field with this arrangement in the Messerschmitt Me-163 rocket-driven fighter. Essentially the plan is to sweep back the wings as much as 43° (swallow) to 45° and, using the wing tip for elevator control and stability, to reduce the empennage to a fin and rudder.

A delay in compressibility troubles and other high speed advantages are claimed. The *Swallow*, with a De Havilland *Goblin* 2 jet unit, is expected to approach the speed of sound.

Simpler Helicopters

Chief significance of the link-up between the Cierva Autogiro Company and Cunliffe-Owen lies in the possibility of putting into production a form of helicopter which is easier to fly.

The Cierva Autogiro Company took over all the aviation work of G. and J. Weir, Ltd. They are therefore responsible for developing the helicopter with jet torque control. Instead of a torque rotor, as in the Sikorsky, this helicopter uses a jet. The method has been completely satisfactory in many trial flights.

It uses more horsepower for control purposes when the aircraft is hovering but less when the aircraft is going forward. More important, it allows the controls to be arranged as in an ordinary aircraft. The Weir helicopter with jet torque control has no complicated combination of azimuth and pitch-plus-throttle sticks. In about 18 months production plans for a helicopter embodying these new methods ought to be under way.

Transitional

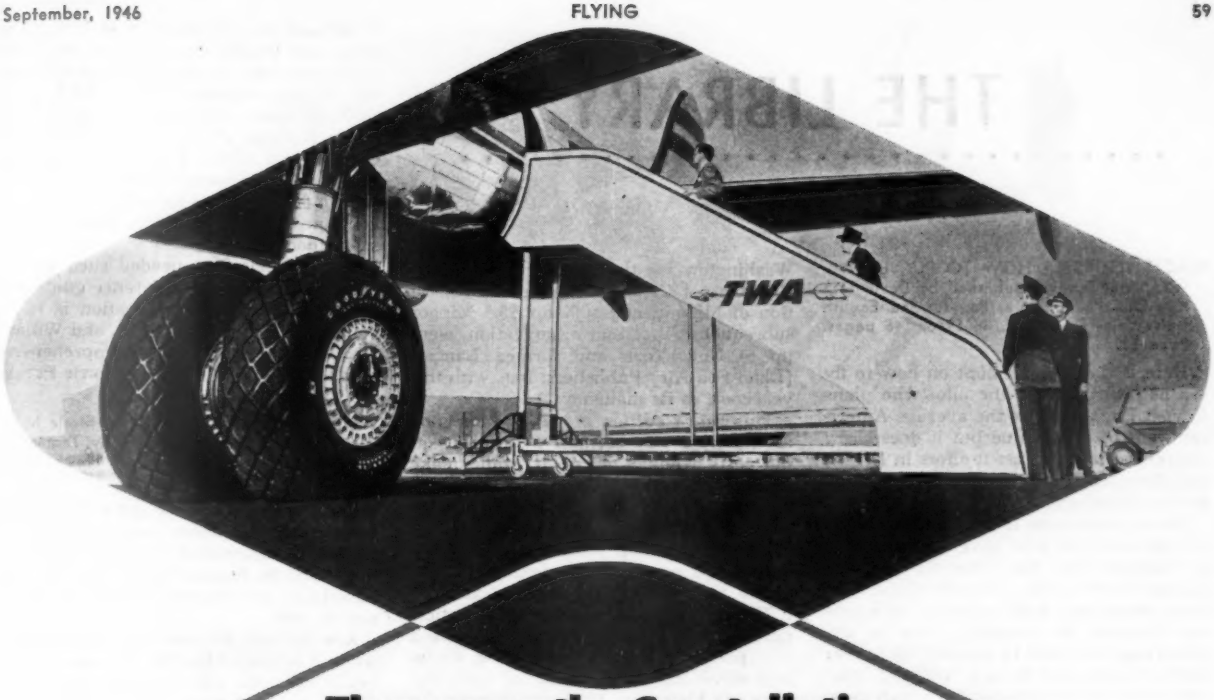
Several transitional transports are now going into production but it looks as if there is going to be a long delay before radical new designs come out. The Handley Page 57 has been going through its trials satisfactorily at this writing.

This aircraft is called the *Hastings* and is the military transport version of the *Hermes*. It will eventually be given a longer fuselage and propjet units—probably Bristol *Theseus*.

The Bristol 170 *Wayfarer* or *Freighter*, which went into service on the Channel Islands route for proving flights on May 8, is reported to be meeting the operating requirements though the cabin is noisy. This aircraft is to be produced at the rate of 15 a month.

The *Dove* eight to 10-seat feeder line and personal transport, is the only en-

(*Continued on page* 80)



They carry the Constellation

Constellations and other super-airliners are equipped with Goodyear tires today for the very same reasons that make them the best bet on your small plane. In world-wide operations airlines have found Goodyears standout in ruggedness, dependability and safety—superiorities stemming from Goodyear's 36 years' leadership in airplane tire development. For greater landing reliability, specify Goodyear tires on your new ship, along with Goodyear wheels and Single Disc brakes—the perfect combination. There's a Goodyear tire for every type of ship—with expert service available from better aviation supply dealers everywhere. Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, California.

GOODYEAR
AVIATION
PRODUCTS

More aircraft land on Goodyear tires than on any other kind

THE LIBRARY

TEACH YOURSELF HOW TO FLY, by Sqd. Ldr. Nigel Tangye; published by David McKay Co., Philadelphia, Pa., for the English Universities Press, Ltd., in 1946. 146 pages. Price $1.

Here is the English slant on how to fly —a helpful book for the pilot who plans to visit England. For the average American, it is of little value but it does carry interest in the contrast it offers in British and American flight procedures and aviation terminology.

Some procedures it outlines will seem strange to those who have learned to fly in trainers like the *Cub*—the author's trainer is obviously a Gypsy *Moth*. One such procedure would appear to be a serious blunder. In describing how an airplane engine should be started, the author instructs the pilot to call "contact" *after* the switch is thrown—advice which must make life exceedingly dangerous for English prop boys.

Much the same can be said in general about two other aviation manuals published by this company for the same market—books on navigation and meteorology. Terminology is English and procedures are confusing. —PAUL FOUNTAIN

THE AIRCRAFT YEARBOOK FOR 1946, edited by Howard Mingos, published by Lanciar Publishers, Inc., New York, in 1946. 702 pages. Price $6.

This is the 28th annual edition of the granddaddy of all American aviation yearbooks. It used to be published in Washington by the old Aeronautical Chamber of Commerce under the direction of Mingos, and sold for $5. Mingos subsequently left that organization, went up to New York and formed Lanciar [Land-Sea-Air] Publishers, Inc., with this yearbook as its mainstay.

This year's edition is basically as good as it always has been, is a little larger, but costs a dollar more. It would make an excellent reference book if it were better indexed and cross-indexed; poor indexing always has been The Aircraft Yearbook's greatest weakness. There are only 11 pages of cross-indexing, for example, to cover this 702-page volume.

There is welcome increase in statistical data in this edition. There are quite a few photographs and three-view drawings of aircraft, plus plenty of facts, figures and history on U. S. aviation for the year.

This is not for light reading. But if you want one of the best factual summaries of the aviation industry available, here's your book. —MAX KARANT

RECENT AERONAUTICAL LITERATURE, A SELECTIVE SUBJECT INDEX for 1945; compiled and edited by Willard Kelso Dennis, Librarian, Beech Aircraft Corp. Published by the Beech Aircraft Corporation, Wichita, Kans., in 1946. 387 pages, processed. Price $5.

This is an invaluable compilation for libraries and researchers. It indexes and classifies by subject matter more than 12,000 articles published in 58 U.S., Canadian and British magazines during 1945.

The indexing system used is an elaboration of that prepared under a WPA grant by N. H. Randers-Pehrson and A. G. Renstrom, Division of Aeronautics, Library of Congress in 1940. The Dennis volume would be more useful to novices if it had included the cross-indexing references contained in the Randers-Pehrson-Renstrom book.

Aviation has long needed such an up-to-date and complete reference guide and the Beech Aircraft Corporation is to be congratulated for publishing, and Willard Dennis for compiling, this comprehensive index. —CURTIS FULLER

WE DROPPED THE A-BOMB, by Merle Miller and Abe Spitzer; published by Thomas Y. Crowell Co., 432 Fourth Ave., New York, in 1946. 152 pages. Price $2.

For the first time we get a human-interest story, not about goats or mice or a technical explanation of atomic fission, but about the human beings who flew the Hiroshima and Nagasaki raids August 6 and 9, 1945.

Abe Spitzer, former AAF radio operator and native of the Bronx, was a member of the crew which carried the instruments for the first raid in the *Great Artiste*, wing *Superfort* to Col. Paul Tibbetts' *Enola Gay*, which actually dropped that bomb. On the second mission Spitzer's *Superfort* carried the Nagasaki bomb.

The book is timely after the Bikini test and reveals for the first time, far better than radio programs or newspaper dispatches could ever do with their time and space limitations, just what goes on in the minds and souls of men who see a new era in warfare begun by what they carried and dropped.—JOHN H. LANCASTER

SHORT VIEWS

AIR MARKING, compiled by the CAA. Published by the U. S. Government Printing Office, Washington 25, D. C. 41 pages. Price 20c.

This booklet describes the methods of constructing, painting and locating air markers. It is an excellent guide for clubs and civic groups in planning air markers for their communities.

EMPLOYMENT OUTLOOK IN CIVIL AVIATION, released by the U. S. Department of Commerce; published by the U. S. Government Printing Office, Washington 25, D. C. Price 10c.

This pamphlet is a compilation of releases issued by the Office of Aviation Information on the following subjects: Estimates of Post-war Aviation Employment, How to Start a Small Airport, How to Start a Flying School, and How to Start an Aircraft and Engine Repair Shop.

Together these present a realistic survey of the employment possibilities and opportunities in aviation. Advice is based on CAA experience and information gathered from the industry. Additional information may be obtained in the seven continental regional and 50 district offices listed in the pamphlet. END

FLYING

"Now be sure the shutter is set at one ten thousandth of a second, so you can catch the expression on my face!"

WE ARE RAISING THE PRICE OF THE Seabee

Effective July 15, 1946, the list price of the standard Republic Seabee becomes $4495. ¶ The original figure announced late in '45, was based on sound evaluations of man-hour and material expenses. Since V-E Day, mounting costs of every part . . . innovations in the plane itself . . . and the voluntary raise in wages by Republic to meet increased living needs, are the sole reasons for this new price. ¶ The four-place Seabee amphibian is of all-metal construction, including wing and control surfaces. It is built by the makers of the mighty Thunderbolt, to standards of ruggedness and performance which would cost thousands more if it were not for Republic's simplified methods of design and manufacture. ¶ Of prime importance to the owner, we have refused to consider any compromise with standards of material or workmanship. Hence, despite the modest increase, this versatile airplane is without question the unparalleled buy which all acclaim as the outstanding value for 1946-47.

Republic Aviation Corporation, Farmingdale, Long Island, New York.

Seabee

A PRODUCT OF REPUBLIC AVIATION

Makers of the Mighty Thunderbolt

AOPA NEWS

The Aircraft Owners and Pilots Association (AOPA), with National Headquarters Office located in the International Bldg., 1319 F Street, Washington 4, D. C., is a non-profit organization composed exclusively of pilots. It looks after the pilot's best interests in all phases of aviation and helps individual pilots with their individual problems. The AOPA operates with a full-time professional staff and is the largest group of civilian pilots in the world. This column is edited by the Aircraft Owners and Pilots Association and opinions contained in it are not necessarily those of FLYING. A special bulletin is sent each month to all registered AOPA pilots and also confidential newsletters from AOPA's Washington staff are sent members from time to time.

NO MORE FCC FREQUENCY CHECKS

Significant progress in AOPA's campaign to make flying better for its members and all others in non-commercial aviation was accomplished when the Federal Communications Commission agreed to eliminate the six months' frequency check of personal aircraft radios.

Action by the FCC followed a request by the association through J. B. Hartranft, Jr., to remove this requirement. Only the initial frequency check of new aircraft will be mandatory. However a calibration may be ordered if the radio is found to be far out of its channel.

Efforts of the association were backed up by the Radio Manufacturers Association private aircraft subcommittee. A hearty thanks is extended to the RMA for its support in this move to aid the private flyer in this practical fashion.

FIRE HAZARDS MENACE PRIVATE FLYING

Fire at airports is a rising menace to private flying, expert fire protection engineers report in revealing the situation to the Aircraft Owners and Pilots Association. Personal aircraft fire losses are high and going up.

Surveys covering fire hazards have been made by the National Fire Protection Association, an international technical organization whose purpose is to investigate fires, improve fire-fighting methods and promote the science of fire protection.

Almost half—42 per cent—of the airport fire losses, according to NFPA, are due to faulty maintenance and storage. Only six per cent are due to smoking. These figures are nearly the reverse of losses in other types of business.

The problem of fire protection for small airports is a difficult one. Airports situated at some distance from municipal fire departments must deal with the fire hazards of high-test gasoline, airplane dope, and oil in the vicinity of welding by their own efforts. The solution requires an adequate system of protection at the field itself.

Protection at the airport is retarded by the excessively high cost of fire-fighting equipment. Manufacturers are now at work on suitable equipment which is expected to cost around $500. The AOPA is urging as the best bet an inexpensive but complete trailer which can be attached to any automobile and used at the site of the fire.

Another interesting revelation is the fact that more fires occur when the airport is in operation than during the hours it is closed. This would seem to indicate that many fires are caused by improper practices.

A program of education along the lines of fire drill for all airport operators and employees as well as one of fire-protection "good practices" for pilots is planned.

The difficulties of obtaining a plentiful supply of water and chemical fire-fighting solutions are also being studied.

Since fire is becoming an increasing problem in personal aviation and AOPA members' good records should be maintained, the AOPA *Pilot* will run a number of articles on recommended fire-prevention practices. A series of studies aimed at just such a safety program is being planned at the present time.

INSURANCE CHANGE BOON TO PILOTS

A big forward step in untangling the maze of regulations now governing aircraft insurance has been taken for AOPA members by its underwriters. An easily understandable breakdown of rates now makes the structure readily usable by members not versed in current insurance practices.

The association congratulates its underwriters upon being the first institution to simplify American aircraft insurance and is hopeful that other insurers will follow suit in offering these benefits to their clients. The further reduction and simplification of hull insurance rates will greatly increase the value of this AOPA service.

AOPA pilots who have already acquired their aircraft hull insurance under their association's master policies will benefit retroactively and will receive refund checks in an amount equal to the difference between the cost of the original rate and the cost under the new reduced rates.

Members' applications which are now in process of issue, likewise will be given the benefit of this further hull-rate reduction.

A further simplification in computing the rates is of great importance to members who participate in the new service. "Loadings" have been eliminated as a basis for rating and there are now only two classifications of airplane usage: (1) Business and Pleasure; (2) Commercial. There is no additional charge for instruction.

Claim service, which will be given nearest the point where it is needed, is handled by independent claims adjusters approved by Bests' or Hines. Claims may be reported by mail, collect telephone or telegraph direct to Kenneth B. S. Robertson Limited, 414 St. James Street West, Montreal 1, Canada, or through AOPA in Washington, D. C.

Payment checks will be mailed within 24 hours after receipt of satisfactory proof of loss.

MEDICAL EXAM BOOST OPPOSED

A strong effort to get an immediate reconsideration of the newly boosted fee for Commercial license medical examinations, recently ordered by the Civil Aeronautics Administration has been instituted by AOPA. The rate was revised to $15.

Three objections are cited by the AOPA in protesting the price hike:

1. The price was announced in a secretive manner unfair to all pilots.

2. The increase of over 100 per cent is not justified.

3. The additional eye examination is not needed.

In the opinion of AOPA members who have been polled on the question, the fee for the physical examination should be reduced, *not* raised. A reduction would be a forward step to make flying costs less and is justified by the growing number of pilots. It is also in keeping with the recent CAA action which removed private pilot exams from the jurisdiction of CAA-appointed medical examiners.

Support for the deletion of the added eye examination came from a panel of physicians, themselves pilots and members of AOPA, when they submitted an expert opinion that the additional eye refraction was not necessary.

A digest of medical opinion in non-technical language showed:

1. It would seem to be difficult to justify eye refractions for the reason that none has been required during the past 20 years.

2. No airplane crash can be attributed to the failure to refract the eyes of the pilot.

3. That, since the CAB has adopted the policy that an applicant can be disqualified only for a physical condition which would suddenly, without warning, disable and incapacitate a pilot in mid-air, such a condition, if it did exist, would be disclosed by a routine eye examination without refraction.

For example, the condition which would be most likely to incapacitate a pilot suddenly in mid-air would be an intra-ocular hemorrhage which would not be determined by refraction.

With these facts the association is urging CAA to consider a request for reconsideration of the matter. AOPA pilots and their friends who are interested in this problem are urged to write their comments to the Administration, Civil Aeronautics Administration, Department of Commerce, Washington 25, D.C., immediately. END

"New Proved Super Power—

TRY ME!"

NEW Mobilgas AIRCRAFT

GIVES FLYING HORSEPOWER

Now, a new high standard of performance and economy from a great new aviation gasoline!...

It's *Flying Horsepower*—from NEW Mobilgas Aircraft!

Recent improvements in the world's greatest catalytic cracking program have lifted *Flying Horsepower* performance even above its famous wartime high!

Today, both commercial and private planes get new proved super power for quicker take-offs, climbs—greater range, speed!

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Fuel all your planes with NEW Mobilgas Aircraft—for *Flying Horsepower!*

Mobilgas AIRCRAFT

SOCONY-VACUUM OIL COMPANY, INC.

and Affiliates: Magnolia Petroleum Company, General Petroleum Corporation

The Army's Civilian Air Force

(*Continued from page* 18)

density to achieve the best possible geographical coverage. Regular AAF installations will be utilized whenever possible but many Air Reserve bases will be activated at civil airports where regular AAF facilities are not convenient to the trainees.

While the maintenance of additional bases other than the 123 now planned would be desirable, cost would be prohibitive. Since it will not be possible to provide unit training for all Air Reserve personnel, service and age-in-grade limitations are being established to provide this training only for active personnel who will be best qualified for assignments in the event of an emergency.

In 1939 the Air Reserve consisted of only 2,703 officers eligible for assignment, of whom only 1,559 were Class 1 pilots. Of these, 719 were on extended active duty with the regular Air Corps, leaving only 840 on inactive status and available for assignment. Of this latter number, only 341 flew as much as 48 hours per year. Under the new Air Reserve program, there will be at least 50,000 officers available for assignment, including 22,500 pilots.

Responsibility for the supervision and administration of the Air Reserve Training program has been delegated by General Spaatz to Lieutenant General Stratemeyer, Commanding General of the Air Defense Command, who is responsible for the organization and administration of the air defense system of the Continental United States. Present headquarters of the ADC are located at Mitchel Field, New York.

The currently planned Air National Guard will consist of 12 wings. The wings will include 24 fighter groups and three light bombardment groups, which will be made up of 72 fighter squadrons and 12 light bombardment squadrons. There will also be numerous supporting units including aircraft warning units, antiaircraft outfits, weather detachments and maintenance units. They will be based at some 79 Air National Guard stations and equipped with approximately 2,164 combat planes. They will have 1,000 *Mustangs*, 800 *Thunderbolts*, 168 *Texans* and 196 *Invaders*. Beech AT-11's, *Skytrains* and Stinson L-5's will also be used, plus 236 A-26's *(Invaders)* as tow target planes.

The new Air National Guard will comprise approximately 3,000 pilots, 4,900 non-rated officers, and 50,000 enlisted men in 84 squadrons. There will be at least one airfield in each of the 48 states and the District of Columbia. Each squadron will be reinforced with a utility flight of four tow targets, two trainers, two liaison and one transport craft.

Maximum ages for second lieutenants are 31 if continuing on in the ANG and 27 if a new member; for first lieutenants, 36 and 32; for captains 41 and 37; for majors, 44 and 40; for lieutenant colonels, 49 and 44; for colonels, 49 and 45; for general officers no maximum. Age requirements for enlisted grades are the same as for the AAF.

Physical requirements are also the same as required to get into the AAF. Veterans will get priority on jobs they held in the AAF during the war. If no veteran is available to fill the job, civilians will get a crack at it provided it is nonflying. Civilians will get a chance at flying jobs only when all veterans have been taken care of and then only if the civilian is a qualified pilot. After a while it is expected that cadet training will be carried on.

The new ANG differs markedly from the pre-war organization. At the outbreak of World War II 29 National Guard units supplied the AAF with only 468 rated pilots. The units consisted basically of observation squadrons which were an integral part of the National Guard divisions. Under the new plan, all the old ANG units will keep their identity with a change of nomenclature though not of number.

The Air National Guard is composed of the recognized Air National Guard units of the several states and territories and the District of Columbia. Its success depends almost entirely upon the success with which those states and territories organize and maintain Air National Guard units.

Allotment of ANG units is based on population. The Federal Government offers the states and territories the opportunity to organize a specified number of units. The state approves and applies for authorization to activate the units. When activated, the units are inspected by the AAF and if approved training gets underway. Regular Army officers are to be made available to help organize ANG units and the National Guard Bureau of the War Department and the Air Defense Command of the Army Air Forces will be ready to assist the states in every way possible.

Forty states, Puerto Rico and the District of Columbia have accepted the entire Guard Base allotment as this is written. Five states have accepted part of the allotment. They are South Dakota, Maine, Louisiana, Mississippi and Indiana. Washington, West Virginia, Minnesota and Hawaii have not yet accepted. Recruiting is now going on in 18 states which have requested and received authorization for total or partial activation. These are Arkansas, Colorado, Connecticut, Delaware, District of Columbia, Illinois, Iowa, Kentucky, Massachusetts, Mississippi, Missouri, Nebraska, New Mexico, Oregon, Pennsylvania, South Carolina, Vermont, Wyoming. Nebraska, Colorado, Missouri and the District of Columbia have requested Federal inspection, indicating that activity should start by the end of the summer, and Missouri bases have already been inspected and should be active by the time this magazine appears on the stands.

Pay for both Air National Guardsmen and Air Reservists will be at the same rates as in the regular Air Forces but Reservists will be paid only during their periods of active duty. Guardsmen will be paid for weekly drills and periods of active duty with the AAF plus flying pay. Guardsmen are expected to fly about 150 hours per year.

To join, Air Reservists apply at the nearest base when it is activated. Guardsmen should apply to the adjutant general of their state or the base where the training will be held. It is impossible to belong to both organizations but members can transfer from one to the other. The Reserve, remember, is strictly AAF and under Federal control, while the Guard is under state control save in an emergency or in a period of active duty.

General Stratemeyer will control Air Reserve and supervise Air National Guard training through his six air defense area commands shown on page 18 —the First, Second, Fourth, 10th, 11th and 14th Air Forces. END

15 YEARS AGO

FROM the September, 1931, issue of this magazine:

First public demonstration of a pilotless plane flown by remote control from another plane was held in Houston, Tex. The radioplane, a five-place Stinson *Detroiter*, was kept under radio direction for 15 minutes.

England's newest lightplane was the Comper *Swift*, a single-place high-wing monoplane capable of being fitted with any one of three engines; the 40-h.p. A.B.C. *Scorpion*, the 50-h.p. Salmson and the 75-h.p. Pobjoy. Top speed, with the Pobjoy, was 145 m.p.h.

John W. Pitts and W. P. Kindree of Detroit invented a "windmill" plane which was expected to rise straight up without any forward run. Called the Pitt helicopter, it had a propeller 12½ feet in diameter made of 60 blades of white ash.

The Angus *Aquila*, an English lightplane designed for mass production, was powered with a 40-h.p. Salmson engine, had a top speed of 107 m.p.h.

Maj. James H. Doolittle, attempting to break a speed record, leaped to safety when the fabric tore loose from the wings of his plane at an indicated air speed of 235 m.p.h. Doolittle was not injured.

Germany offered a sport plane complete for $225. The most expensive part of the plane was the 14-h.p. motor which cost $130. The plane attained a speed of over 60 m.p.h.

An Italian flyer, Mario De Bernardi, had designed the Caproni "97," a five-seat, single-engined monoplane with a wheel by which the pilot controlled all the plane's movements. There were no foot controls.

The B. F. Goodrich Co. had successfully tested its first "overshoe" deicing equipment, which consisted of a system of flexible rubber tubes arranged on the leading edges of wings, control surfaces, and landing gear. By turning a valve, compressed air was admitted, expanding the tubes which caused the ice to break off.

Jacobs Machine and Airplane Works had brought out a two-place lightplane which could be powered with a six-cylinder Anzani engine, a Szekely, or a 50-h.p. Jacobs engine. Price: $1,500.

your place in the sky

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HIGHER—World's Altitude Record for Light Planes

34,311 feet. Set by Groce Huntington at Los Angeles, Cal. International record for airplanes of second category.

FURTHER — 1700 Miles in 16½ Hours

Flight made by Mrs. Evelyn Sutton from Vancouver, B. C. to Tia Juana, Mexico. Gross load of 1462 pounds.

FASTER—Speed Record for Light Planes

Winner of the Firestone Trophy at the races held at Miami in Feb. 1946.

LONGER — 14 Days Aloft in a Taylorcraft

Hunter and Humphrey Hunter took off on July 23, 1939, and landed two weeks later.

I Flew 'The Wing'

(*Continued from page 34*)

of the trailing edge. In appearance they are like conventional ailerons, except they are in two sections, one on top of the other. They open both upward and downward.

Manual control of the XB-35 is the same as with a standard plane, except that it has "split" rudders, or rudder controls which work independently of each other. The pedals are operated in the normal manner for executing a co-ordinated turn.

When a right turn is desired, for example, pressure is put on the right rudder pedal causing the right rudder to bellow, or open both up and down. This induces drag, slowing the right wing and allowing the left to come around faster. Left turns are made similarly. Both rudders can be opened at the same time for effective deceleration during landing approach, although the "35" is equipped with conventional flaps.

"Elevons," a Northrop creation, serve as both elevators and ailerons. These are located inboard of the rudders and have the appearance of conventional ailerons. To climb, one pulls back on the control column and both elevons deflect upward, depressing the trailing edge and raising the nose. Descent is the reverse. To make a right bank in a climb—remember the elevons are up—one simply turns the control wheel to the right. This lowers the left elevon while the right one remains in climbing position. The left elevon then acts as an aileron, banking the wing to the right. For banking in level flight, the elevons automatically work as ailerons, one going up and one down.

Every Northrop pilot had been watching progress on the Flying Wing. We had talked to engineers about each phase of its design. All of us were speculating as to whom the flying assignment would be given. Secretly, I hoped it would be me and I ran up all the hours I could on the N-9-Ms.

When the company hired Fred Charles Bretcher specifically for the XB-35 project, my hopes faded. He is an extremely competent man, with plenty of time on four-engined equipment as an Air Forces major. But a few days after his arrival the two of us were called into the office of Curt Bates, supervisor of flight tests. He told us it had been decided that I should be first pilot because of my seniority at Northrop and my time in N-9-Ms. Fred was to be co-pilot during the first 10 hours of flight; then he and I would alternate as first pilot. I felt like a kid at Christmas time.

Then our work began in earnest. Fred and I were fortunate in having O. H. Douglas assigned to us as our flight engineer. Doug knew the "35" from one end of its 172-foot wing span to the other and from the fore-tip of the "nose" back through the 53 feet to its tailless trailing edges.

We began preliminary conferences with engineers and an overall inspection of The Wing. On May 16 we hauled the "35" out of the hangar, towed it to the 5,100-foot runway and put it through its first taxi run.

It was not really a run—it was a creep. Without waiting for the four 3,000-h.p. engines to get thoroughly warmed, we started down the runway. Our highest speed was 30 m.p.h. On making a 180° turn at the end of the field, the steerable nose wheel failed. I had to steer back to the hangar with engine and brakes. But we were impressed by the fact that The Wing handled much the same as any other tricycle-geared plane. The fact that The Wing has pusher-type engines, each turning two, four-bladed counter-rotating props, didn't detract from its ground handling characteristics.

After this initial test our crew went back to Wright Field for a brief familarization course on heavy planes. We flew Boeing *Superforts* for more than eight hours, returning to the Northrop plant on June 3.

Then we really began an indoctrination course on the "35." For more than a week we met in long sessions with department heads and engineers. We studied the plane's hydraulic system, the landing gear, the fuel system, and learned all we could about performance of the *Wasp Majors*. We studied the Hamilton Standard superhydromatic propellers, learning more about the use of reverse pitch for brakeage.

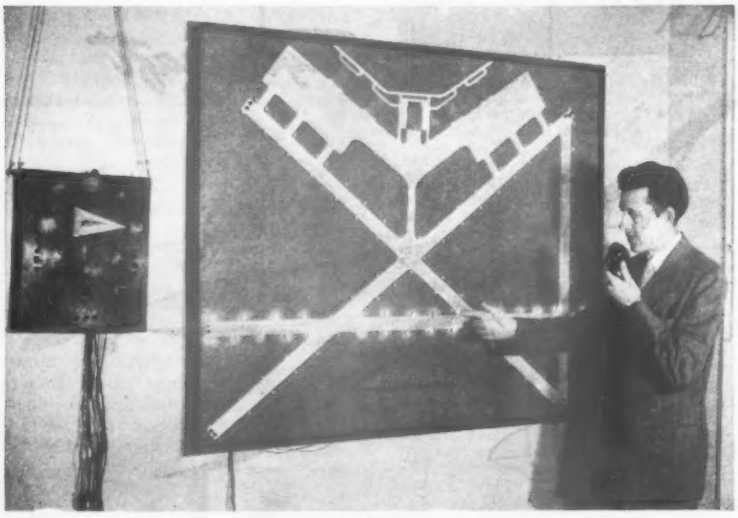
But a person can't possibly learn all about such an intricate piece of machinery in a week's time. What we did learn were "do's and don'ts" regarding every system, and what to do if there were a malfunction in flight.

In the meantime, the "35" was being readied for high-speed taxiing. The nose wheel was repaired and other adjustments made. Finally the plane was "bought" by inspection, and on June 10 we ran our first high-speed taxi.

We were prepared for actual flight. Many first flights have been inadvertent and I had to be ready to fly in the event we couldn't stop or that The Wing bounced into the air and we had to keep flying.

On the first run our air speed indicator failed. An auto trailing us was doing 60 m.p.h. and we were pulling away from him slightly, making our speed around 70 m.p.h. We traveled about 1,800 feet at this speed. I applied reverse propeller thrust and we slowed down immediately. On all our runs brakes were not applied until we were down to around 30 or 40 m.p.h.

We conducted some 30-odd taxi runs. Our highest speed was 115 m.p.h.—registered on a theodolite. We used up about half the runway in gaining this speed and had ample space in which to stop. I handled all controls during acceleration and

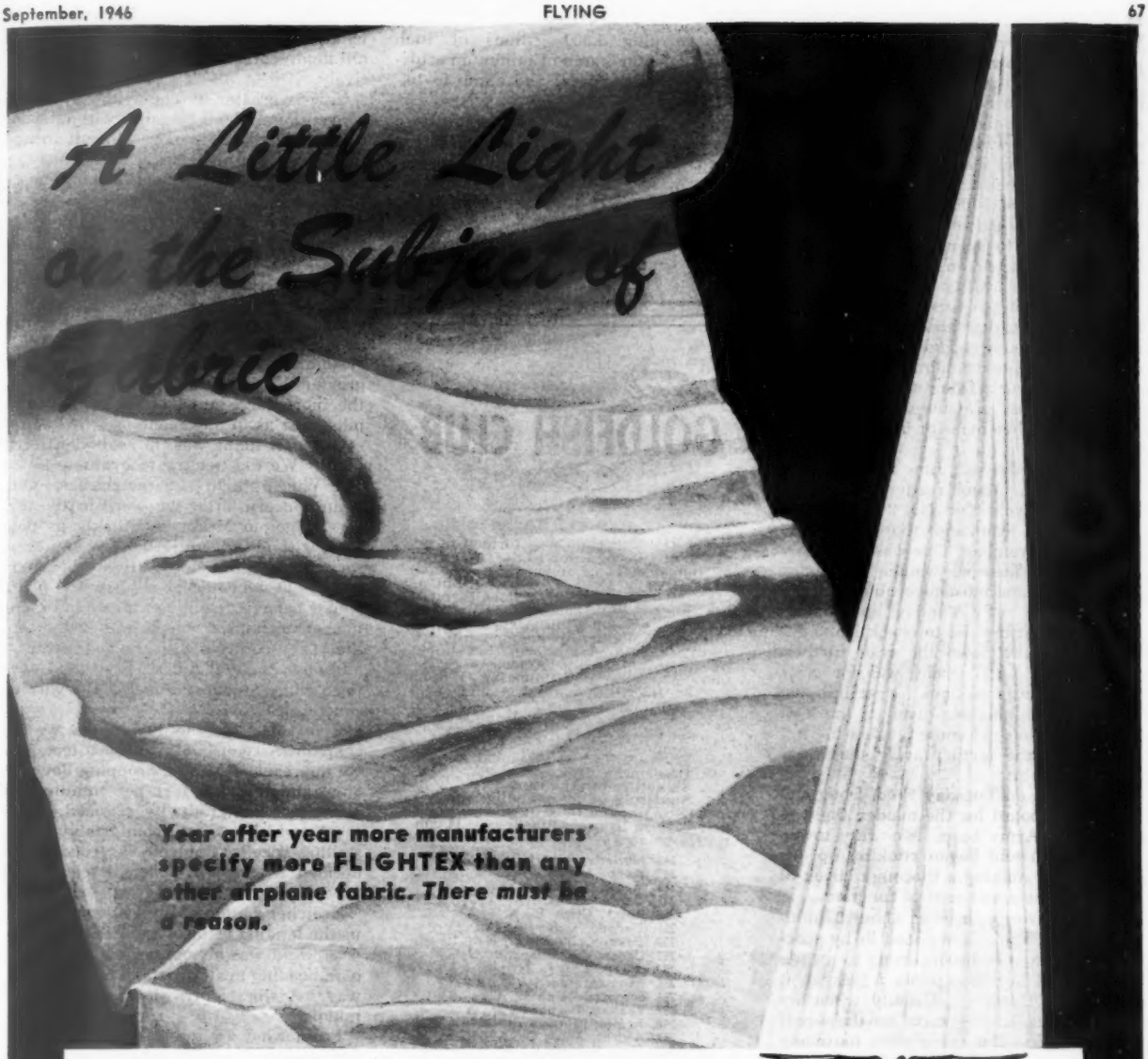


RADIO-CONTROLLED LIGHTS

A RUNWAY lighting system which is actuated by a broadcast signal from the plane may soon make night operations possible at airports which cannot afford to maintain a night staff. The pilot will simply speak into his mike as he comes in to land on a deserted field and the correct runway will instantly blaze with light.

Achilles Corcanges of Mineral Wells, Tex., the inventor of such a pilot-controlled lighting system (above), claims that a plane requires only a low-powered radio transmitter to actuate the lights. The ground unit, connected with runway lighting switches and the airport wind tee, will select and light the proper runway on receiving the radio signal.

Corcanges plans to use a receiver with only a five-mile range so that transmissions to other nearby airports will not affect its operation.



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Bretcher took over the throttles when the props were thrown into reverse pitch.

My main job was to keep The Wing down the center of the runway and to judge when we reached the highest possible speed at which we still would be able to stop on the remaining runway. Control was the important thing. Our runway was only 100 feet wide and the plane's tread is 42 feet. That didn't leave much margin to spare. Also, I had to hold the nose wheel on the ground as The Wing has a natural tendency to raise the nose when using reverse thrust, making it impossible to use the nose wheel for steering. Bretcher and I occasionally changed places to acquaint ourselves with each other's work. Doug was particularly concerned with pressures, temperatures and all the other maze of instruments on his panel.

Finally, on Friday, June 21, we knew The Wing was about ready to fly. Our only doubts were that No. 3 engine was running too lean and that the plane hadn't been weighed. This was extremely important because we wanted the center of gravity in the most favorable position.

We wanted to fly Monday, but ran one more taxi test instead to check No. 3 engine and shake down the craft further. The forecast for Tuesday was for clear weather. I was anxious to get into the air. Like the amateur diver on the high board—the longer I contemplated the initial plunge the farther away the water appeared to be.

At 10 a.m. on Tuesday Fred, Doug and I climbed aboard for the maiden flight to the Muroc Army base. We were towed into position and began running up our engines and making a thorough check of all instruments and control functions.

We were ready to go in about 25 minutes. The field was hemmed in by spectators. That was disconcerting to a little friend of all Northrop pilots, a jackrabbit known as "Harvey." Usually when we start engines, Harvey races for the weeds by the fence. But there were too many people there and Harvey made a bee-line down the runway.

"Fred, when we start you watch Harvey," I cracked. "If he passes us, throttle back!"

This was it. Throttles were advanced to 35 inches of manifold pressure with brakes set. We cleared with the tower. Brakes were released, the throttles were moved rapidly up to produce 46 inches of pressure at 2,200 r.p.m.—and we were on our way. At 120 m.p.h., I slowly applied elevator.

At take-off The Wing has a high angle of attack. You get the feeling your climb is too sharp and that you may stall. It takes a lot of will power, until you get used to it, to keep from putting the nose back down.

I knew this when we took off with The Wing, so I held steady. Our main gear lifted from the runway in 3,100 feet. Each engine was developing 2,400 h.p., well below our 3,000-h.p. maximum. It was a comforting thought to know there was plenty of excess power instantly available to lift our 111,320 pounds. This weight was far below the designed gross overload weight of 209,000 pounds. We were carrying 1,900 gallons of fuel, enough for four hours of minimum cruising flight, plus take-off and climb to 10,000 feet.

I didn't try to gain altitude until we were indicating 160 m.p.h. with gear extended. At 2,500 feet everything was going swell, so I reduced power and continued to climb to 5,000 feet, where we raised gear.

With the gear coming up we expected a decided change in trim, since the nose wheel retracts sideways and the well doors are off the plane's center. But there was no noticeable effect. A *Black Widow* accompanying us was fitted with a special test frequency assigned by the FCC to receive and record the transmission of our interphone conversations. The *Black Widow* pilot intercepted our talk about the gear and reported that it was coming up. Almost immediately we felt the uplocks latch.

After climbing from 4,000 to 8,000 feet at an indicated 165 m.p.h. and a rate of climb of 750 feet per minute, I leveled off. Then, cautiously, I began exploring longitudinal, lateral and directional controls. I executed gentle turns (approximately 18° bank) in both directions and noted that all flight controls were operating effectively.

Yaw is greater in The Wing than in a conventional plane because, without vertical stabilizer, it is more difficult to notice. However, experience accustoms the pilot to this and it becomes a simple matter to watch and correct. Our controls groups had estimated that we could get into as high as 10° of yaw movement before it began to show effect on engine performance. But we had no difficulty with the big wing.

All flight controls on the "35" are hydraulically operated through a booster system. The higher your speed and the greater the deflection of control surfaces, the more force must be exerted by the pilot, just as in any plane.

Our first flight was, in reality, a ferry flight. We did not try to evaluate all of The Wing's flight characteristics. Our main concern, after we were in the air, was to get to Muroc as quickly as possible without encountering any unnecessary hazard, and to learn at the same time what we could about how the plane would behave during approach and landing. Our highest speed was 200 m.p.h. We tested controls with the gear both up and down several times. Fred took over for a while to gain the feel of the various controls.

Upon clearing the mountains we let gear down again while at 8,000 feet. As we approached Muroc, dropping down at approximately 800 feet per minute, the air speed was gradually reduced to 115 m.p.h., which was still comfortably above stalling speed. Control was good and I decided to come in "over the fence" at 115-120 m.p.h.

Bretcher radioed Muroc tower and got us the landing right-of-way. The 20 m.p.h west wind was almost perfect. We were on a heading nearly parallel with the runway. A slight correction put us in the middle.

From what I'd found out in the air, I felt reassured about making a landing. There was every assurance that the 35 was a completely "honest" plane. By prearrangement, we didn't drop flaps because it seemed the most cautious procedure. I expected the plane to float, but it came in nicely. When the wheels touched I was using only a small amount of power, just advanced of idle, and our speed was 112 m.p.h.

We'd been too busy in flight to talk much but we made up for it when we cut the switches. We agreed that the engineering and flight work with N-9-Ms had paid off and that this first flight was an outstanding success. The big plane behaved almost exactly like its smaller prototype.

No one can make a true appraisal of an airplane after having flown it for only 44 minutes. But I know that I'm eager to take The Wing into the air again and as far as I'm concerned, there is no reason to believe that it will not come up to the complete expectations of its designers.

(Max Stanley flew the XB-35 again, on July 3, for 1 hr., 57 min., and reported only one minor malfunction—a faulty governor on one propeller.—ED.) END

The GOLDFISH CLUB

The Goldfish Club was formed in order to give recognition to the thousands of pilots and aircrewmen who have ditched their aircraft or bailed out at sea and have saved their lives through the use of life jackets or dinghies. Army, Navy and Civil Air Patrol personnel are eligible for membership. To apply, the following information should be submitted to the American Secretary, Max Karant, Managing Editor, FLYING, 185 North Wabash Avenue, Chicago 1, Illinois:

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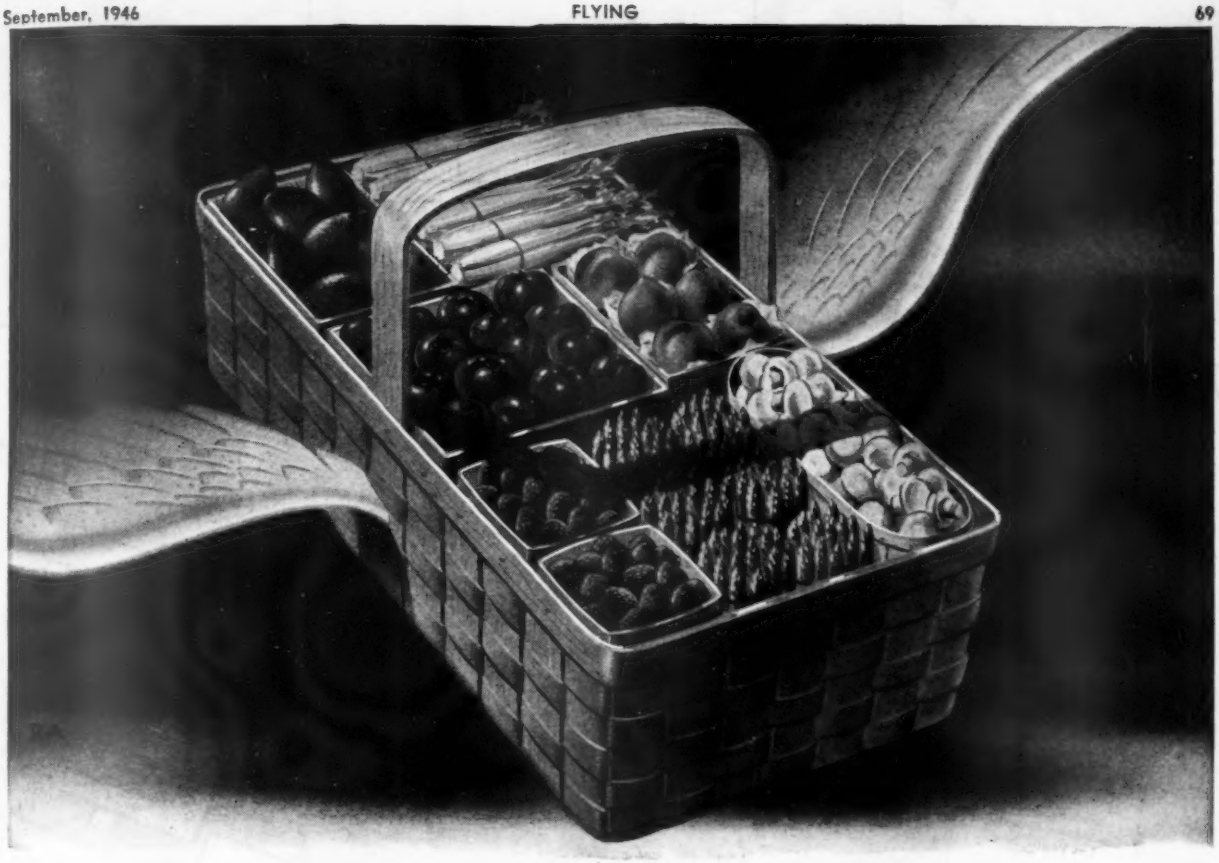
2. Service address
3. Home address
4. Date and location of incident
5. Description of incident
6. Signature of applicant
7. Signature of commanding officer

A listing of the Club members, a regular feature in preceding issues, is continued below:

246. Moriarty, Robert D., A
247. Bruno, Armand, A
248. McFaden, George, A
249. Carlson, Robert, A
250. Roach, Clyde E., A
251. Zielinski, Eugene A., A
252. Graham, Thomas J., N
253. Christensen, Leland B., N
254. Albert, Carl F., N
255. Koerner, Frederick C., A
256. Shipman, Ralph R., A
257. Keating, Thomas P., Jr., A
258. Acosta, Philip, A
259. Andrist, Anson G., A
260. Hess, Kenneth K., A
261. Whitworth, Richard G., N
262. Briggs, W. R., N
263. Rowley, James, N
264. Courtney, J. B., N
265. Babin, H. W., N
266. Musial, J. S., N
267. Placzek, John, N
268. Bright, Albert O., N
269. Pinette, Norman L., N
270. Patterson, Howard D., N

A—Army; N—Navy.



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Hogan Flying
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Ed. Youngs
Dakota Aviation
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Huron, S. D
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North Central
Aviation Co.
Alexandria, Minn.
H. R. Schlesselman
Mankato Aero
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Mankato, Minn.
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Lea. P. Brennan
Iowa Airplane Co.
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A Plane For Your Business?

(*Continued from page 42*)

cluding employing a pilot, will be about 7½ cents per mile. Since the plane will carry three passengers, that is 483,000 seat miles of transportation at a cost of 2½ cents per seat mile. The total outlay is $12,125 per year. The same amount of transportation bought on an airline would cost approximately $23,667 and the airlines don't always go when and where Mr. Executive wants to go. The transportation time would be at least as fast, even though the plane were a little slower, because there would be no waiting on ticketing, baggage checking, limousine delays and enroute stops.

Figuring rail fares for a 400-mile trip at an average rate of 4.6 cents per mile including lower berth, meals and tips, the same 483,000 seat miles of transportation would cost approximately $22,218 and travel time would be three to four times longer.

Let's say a company can afford the ultimate in utility, which means routine traveling at night and on instruments under most all weather conditions. That calls for a twin-engined airplane which would be especially useful if a large percentage of trips were for long distances, say 1,000 miles or more.

For this purpose, a practical airplane might be a five-passenger plane with two engines totalling 500 h.p., cruising at 200 m.p.h. and costing $30,000 to buy. Such a plane, operated 1,000 hours annually, would provide 218,000 miles of transportation each year. That's 872,000 seat miles, figuring four passengers plus the pilot. It would cost 11.9 cents per mile to own and operate, including pilot, or slightly less than three cents per seat mile. That's dirt cheap for such extremely fast and flexible transportation. The 872,000 seat miles of transportation would cost a total of $25,925 in a year. By airline the same amount of transportation would cost about $41,856 and by rail, taking four or five times as long, about $40,-112.

The use of the small or medium airplane holds great promise for business and executive transportation. It can provide valuable savings in time, money and convenience and very often will pay for itself many times over in the first year.

The executive transport plane also can perform another important function as a courier plane carrying important documents, packages and miscellaneous priority cargo at high speeds. Such use can be an important money saver in a majority of modern business and industrial activities.

To summarize, it has been shown that the private-owner airplane, when used partially or wholly for business transportation, is an efficient economic unit, capable of important savings of time and money.

The potential value of the private-owner plane is its greatest asset. Its utility will improve steadily during the next few years as airports increase in number and as aircraft service operators multiply. As its uses increase more people will be influenced to buy. Hand in hand with these developments will come reductions in selling prices, maintenance and fuel costs, and insurance rates. And when this circle is completed it will start all over again.

To arrive at the costs which have been quoted in this article a formula was developed expressly for determining operating costs of personal aircraft within plus or minus five per cent. Briefly, the equation is developed as follows:

1. Fuel and oil costs are based upon the national average costs per gallon (fuel 27 cents, oil $1.30) and computed on an assumed average consumption per cruising horsepower hour at cruising speed (fuel 0.52 lbs. per horsepower-hour, oil 0.0055 lbs. per horsepower-hour).

2. Maintenance costs based upon average costs of 20-, 50-, 100- and 500-hour checks, inspections and overhauls for personal aircraft of varying gross weights and power ranges, plus reserve toward airframe overhaul after an assumed average period of five years. Average costs were then computed on the basis of cost per horsepower-hour.

3. Hangar rental is based upon the national average, computed on the basis of airplane size with number of passenger seats as size criterion.

4. Depreciation is based upon assumed average rate of 13.5 per cent per year for five years with 32.5 per cent residual value.

5. Insurance costs are based upon actual quoted rates of a major insurance company.

The resulting formula is surprisingly accurate under average circumstances. However, an individual owner undoubtedly will find some variation due to local conditions and individual preferences especially in hangar rental rates and insurance coverage.

For those interested in working out individual problems as easily as possible, here's what to do:

Add fuel and oil costs per horsepower-hour ($.0243) and maintenance costs per horsepower-hour ($.0134 for new plane). For a new plane this totals $.0377. Multiply this sum by the cruising horsepower of the airplane (usually around 70 per cent of total rated horsepower). You now have the cost of fuel, oil and maintenance per hour flown. Multiply this by the number of hours flown per year, which gives you the total cost per year. Add to this total the annual hangar rental cost, which is the number of passenger seats multiplied by $90, if you don't have a specific cost. Add in depreciation cost, which is the selling price of the airplane multiplied by 0.135. Finally, add in insurance cost up to the limit you plan to carry. If you don't have a figure handy, add (1) $22.50, (2) the sum of the number of passenger seats multiplied by $12.50, and (3) the sum of 0.125 multiplied by the selling price of the airplane for complete ground and flight, all risks, or the sum of 0.035 multiplied by the selling price of the airplane for all risks ground only plus fire in flight. These insurance figures assume a new airplane weighing under 2,000 pounds and used for private business and pleasure only. END

HUNTSMAN PILOT

THOSE are Mexican geese hanging from the propeller of Huntsman-Pilot W. H. Coffin's Aeronca *Champion*. A resident of Los Angeles, Calif., Coffin flies to the Ojas Negros Valley in Mexico in about five hours —compared with the grueling 22-hour drive by automobile. These geese filled the rear cockpit of his plane after a shooting trip last season.

There's a Franklin Engine for every installation

AIRCRAFT engines are finding themselves in some unique positions these days. Many of them, of course, are still in conventional tractor-type planes. But others may stand on end in vertical helicopter installations, or be completely submerged inside a wing. Pushers, too, are becoming popular. All these new installations require aircraft engines equipped with integral pressure-cooling systems.

No matter which engine application the plane designer may choose, he can turn to Aircooled Motors, Inc., for a standard Franklin engine to furnish reliable, economical power.

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POWER BY Franklin

FINE AIRCRAFT ENGINES

AIRCOOLED MOTORS, INC. SYRACUSE 8, N. Y., U. S. A.

The Culver V

(*Continued from page 32*)

icate tests at Kansas City recently. It was found that the original airplane needed revisions in its flap-extension limits, a counter-balanced rudder, and the addition of a ridged anti-stall strip on the leading edge of the center section. But the basic design, radical as it might seem, proved sound and the Culver now has its ATC.

The "V" is designed for just one person: The Dub. All the pilot need do is turn the big wheel mounted between his and his passenger's seat until the Simpli-Fly dial in front of him reads "take-off," "landing," "approach," or whatever it is he wants to do. The airplane itself practically does the rest. For a normal take-off, for example, the pilot taxis out to the runway, runs up his engine, then cranks the Simpli-Fly wheel backward until the dial indicator says "take-off." What actually happens when the wheel is cranked to the take-off position is that the elevator is moved to a nose-up position and, at the same time, the large flap is lowered to a pre-determined position. The pilot then opens the throttle wide, steers the ship down the runway by tapping the toe brakes lightly, and pulls back the stick when the airspeed reaches 60 m.p.h. The stick operates the rather small elevator on the large horizontal fin. If need be, the pilot can have full manual control with this small elevator, almost without regard for the setting of the Simpli-Fly system. (One "V" took off with the Simpli-Fly control set for landing, and with the propeller in cruising pitch.)

The landing procedure is roughly the same thing in reverse. The basic glide and approach is set simply by cranking the wheel until the arrow points to the position desired. The airplane does an excellent job of it right down to within a few feet of the ground. From that point on it is up to the pilot to use his judgment as to when the stick should be eased back and the airplane flared off for the actual landing.

The average pilot, flying the "V" for the first time, probably will be a bit leery of the airplane's landing technique until he gets used to it. With the Simpli-Fly control set in the full landing position, the airplane's large flap is lowered 13°. This gives the airplane a rather steep landing path; my first impression was that I was in a fairly slow (80 m.p.h.) dive. You literally aim the nose at the spot you want to land on, then just dive at it and flare off. The timid pilot, until he gets used to so steep an approach, can use less flap (by adjusting the Simpli-Fly wheel) and make his landing from a shallower approach.

CULVER V SPECIFICATIONS
Approved Type Certificate No. 778

Wing span	29 feet
Length	20 ft. 6 in.
Height	6 ft. 9½ in.
Gross weight	1,600 pounds
Empty weight	1,040 pounds
Top speed	over 130 m.p.h.
Cruising speed	115-130 m.p.h.
Landing speed	60 m.p.h.
Range	about 700 miles
Rate of climb (sea level)	660 f.p.m.
Service ceiling	13,100 feet
Fuel capacity	32 gallons

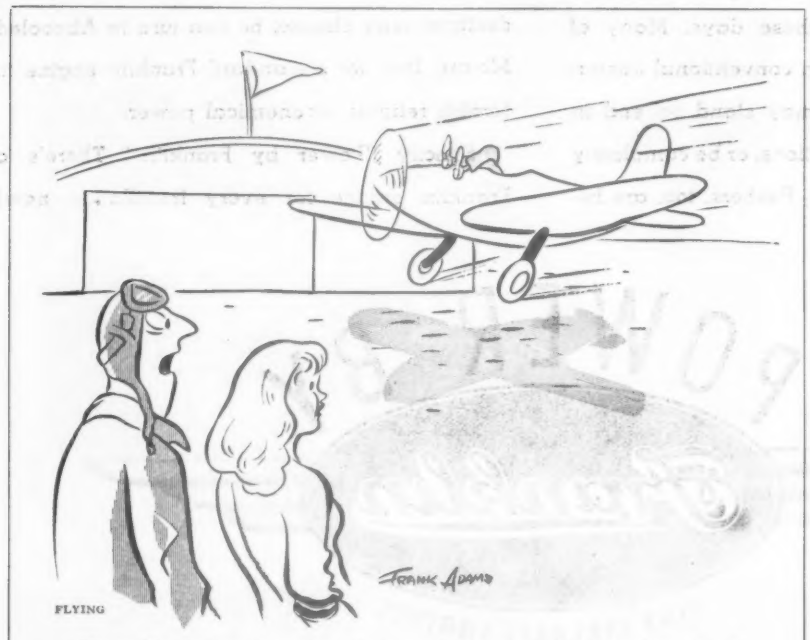
Source: Culver Aircraft Corporation

The actual landing, incidentally, is not like anything the average lightplane pilot is accustomed to. Normally, the Culver is never stalled-on. The 80-m.p.h. approach becomes 60 m.p.h. when the "V" is flared off for the landing. The standard "V" landing is made at 60 m.p.h. and the airplane is simply flown deliberately onto its tricycle gear. It remains to be seen how the airplane will hold up under this treatment once it gets into the hands of amateur pilots operating from rough fields. However, the "V" landing gear springs from the extremely rugged design of the tricycle gear used so successfully by Culver on its TD2C-1 radio-controlled target planes. So the "V" gear may prove quite capable of handling rough fields and nosewheel-first landings that are sure to come when inexperienced pilots misjudge the flare-out point. Once on the ground, the toe brakes can be jammed on hard; I actually locked the two main wheels with the brakes so that the airplane just slid across the airport. But if the brakes should fail the pilot will have to have a more-than-average amount of field ahead of him to dissipate that 60-m.p.h. landing speed. I suspect that the "V" will not be the ideal small-pasture airplane. Any normal airport used regularly by private pilots should, of course, be satisfactory. But personally I would not want to put a "V" down on a small, rough pasture or clearing at 60 m.p.h., relying on the brakes (and rugged gear) to get me slowed down and stopped. In case of a forced landing, of course, I wouldn't hesitate doing so; if the field looked at all doubtful I'd simply keep the wheels retracted. But it's the squeezing into little fields—done without too much trouble in *Cubs* and similar lightplanes—that I would hesitate trying in the "V".

The new Culver is extremely difficult to stall. Test Pilot Bill Taylor showed me how to do it by cranking the Simpli-Fly wheel into the full landing position, lowering the wheels, then pulling the nose up steeply. I tried it several times and the airplane appeared to stall at between 52 and 55 m.p.h. There was no tendency to spin, the nose simply dropping straight forward. There is excellent aileron control at all times. Maneuverability in the air is good; the "V" is quite sensitive on the controls and, of course, its Simpli-Fly system makes it quite easy to trim for cruising.

The two days on which I flew the three "V's" on which this article is based, were as bad as any flyable weather could be. The temperature was in the 90's and the air unusually rough. It was practically impossible to get an accurate measurement of the plane's rate of climb, for example. The only climb I was able to record averaged out to about 520 f.p.m. (at 1,541 pounds, 59 pounds under maximum gross), although the manufacturer claims 660 f.p.m. One Culver distributor on the California coast told the factory he had got up to 900 f.p.m. in the cool sea-level air. The "V" gets its best rate of climb at 76-80 m.p.h. indicated air speed.

The Culver people say the "V" can be cruised at anywhere from 2,300 (about 115 m.p.h.) to 2,525 r.p.m. (about 130 m.p.h.); there is no single rated cruising speed such as is customary with most airplanes. I flew one "V" (NC-80137) from Wichita to Hutchinson, Kan., and return at 3,300 feet above sea level. I used 2,500



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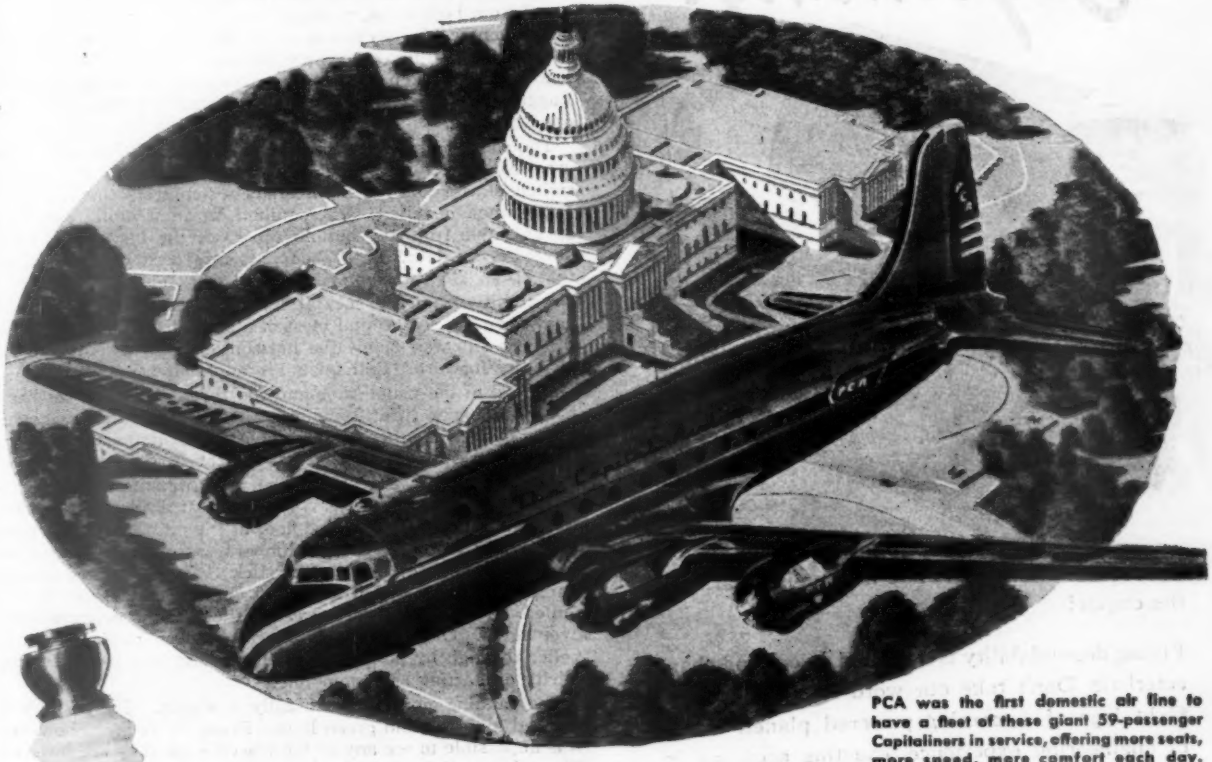

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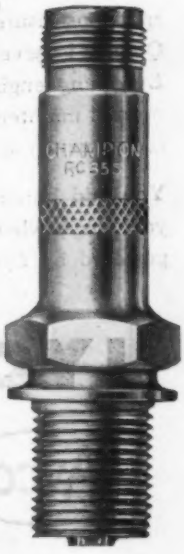

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r.p.m. and averaged a ground speed of 121 m.p.h. for the round trip. At that r.p.m. I was using about 82½ per cent of the engine's 85 h.p. The air was quite rough throughout the trip.

As 85-h.p. airplanes go, the "V" is a little slow getting off the ground on take-off. But once an airspeed of 60 m.p.h. is reached the airplane climbs away steeply, accelerating noticeably once the gear is retracted. The Simpli-Fly setting is left at "take-off" until the airplane has climbed about 400 feet, then the Simpli-Fly wheel is rolled forward until the arrow in the cockpit dial points to "climb." At cruising altitude the wheel is again rolled forward until the arrow points to "cruising."

Another unconventional feature of the "V" is its forward-opening hatch. It can be opened while the engine is idling but it's wiser to have the engine off altogether. The cockpit is entered from both sides, pilot and passenger having to climb up on the center wing section to get in. Each person must step over the unprotected flap onto the wing; there are sure to be a number of flaps broken by people accidentally stepping on them. Baggage is stored ahead of the instrument panel, under the opened hatch.

The cockpit itself is neat, attractive, but slightly cramped for cross-country flying. The throttle, propeller control, ignition switch, starter and other miscellaneous controls (including the radio when installed) are mounted on an "island" extending on an angle from the bottom center of the instrument panel down to the floor. Both occupants must rest one leg against that "island," an uncomfortable necessity on a long flight.

Visibility from the cockpit is exceptional. Both pilot and passenger can see around most of a 360° circle. In level flight the nose sits well below the horizon, giving particularly good visibility forward. Both seats are adjustable.

Instead of the usual knob-and-rod throttle, the Culver has a handy T-shaped throttle mounted in the top center of the "island." Like all other knobs and handles in the cockpit (including the control sticks) it has a clear Lucite handle.

Starting the "V" engine (an 85-h.p. Continental with fuel injection) is a major task, as it is with most airplanes. There is a wobble pump handle in the floor at the pilot's feet. He gives that a few wobbles, then unlimbers the primer (under the dash just ahead of the control stick). Two or three careful pumps, then the switch is turned on and the starter handle pulled. If the engine doesn't catch, the whole procedure starts over again. Of course, it's a long way from pulling the propeller through by hand but it's also a long way from the simplicity of starting an automobile.

The landing gear is electrically operated. Its position is marked by a red and green light. From the cockpit, however, it is impossible to see any of the wheels once they are lowered. There is a satisfactory check that can be made, however. A mechanical emergency hand crank is mounted under the panel in front of the pilot, just above the right rudder pedal. The pilot simply twists the handle to the left. If it cannot be moved the gear is down.

Another interesting point about the Culver V is its all-wood construction. It is probably the only all-wood airplane now in production. The structure is sturdy and rugged and the cockpit has little of the metallic racket to be found in some all-metal private planes. As a matter of fact, the "V's" worst cockpit noise comes from the two plastic ventilators in the hatch which set up a loud roar in flight.

The "V" sells for $3,950 f.a.f. Wichita. The Sensenich two-position wooden propeller comes as standard equipment. So do the two landing lights, instrument lights and gear-warning horn. Now that Culver has its ATC, deliveries are beginning to increase; several demonstrators already are in use around the country. Meanwhile, Culver is preparing to apply for the CAA's "non-spinnable" rating, now held only by Ercoupe.

The Culver "V" is an excellent addition to the post-war private-plane market. But it will attract more than the usual amount of sneers for no other reason than the fact that it is a step forward. Much of the factless gossip about this airplane can be dispelled in two ways:

1. Culver should take great pains to see to it that "V" pilots are taught how properly to use and control the airplane's many excellent features.

2. The prospective customer or interested pilot should fly the airplane himself—under the guidance of an experienced "V" pilot—before jumping to any conclusions.—MAX KARANT.

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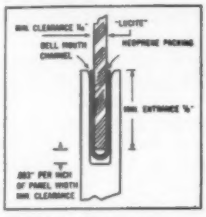
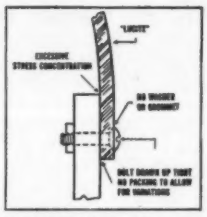


RIGHT WAY—Proper mounting assures a snug fit and eliminates rattles, leaks and stresses.



WRONG WAY—Danger of leaks, rattles and stress breakage, with incorrect mounting.

RIGHT WAY—Carefully cut or file the "Lucite" until it fits perfectly.

WRONG WAY—Muscles may do harm. Never try to snap-fit "Lucite."

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Plastics
BETTER THINGS FOR BETTER LIVING ...THROUGH CHEMISTRY

Uncle Sam's Pilot Pals

(*Continued from page 27*)

Georgia. Clifford, who is 44, was born in Battle Creek, Michigan, where he first flew in 1925, soloing in a Jenny. A year later be bought a Waco 9 in which he barnstormed Michigan during his spare time for the next five years. In 1927-28 he supervised construction of a four-place biplane for the Gillis Aircraft Company, working with University of Michigan designers. He became flight instructor in 1939. He holds commercial pilot, A&E mechanic, flight instructor, ground instructor, and Army instrument ratings.

Charles E. Cox, Jr., serves Illinois, Ohio, Indiana, Michigan, Kentucky, Wisconsin, Minnesota, and North Dakota. His headquarters are at 608 South Dearborn Street, Chicago 5, Illinois. Cox, 49, first flew with the Army in 1917, barnstormed from 1921 to 1927, and became prominent in various aviation activities in Indiana during the thirties. He has owned an amphibian as well as a putt-putt. As president of the Indiana Trades Association before the war, he sponsored annual mass lightplane flights. During World War II he was a colonel in the AAF's Western Flying Training Command.

William H. Berry, serving Texas, New Mexico, Arkansas, Louisiana, and Oklahoma, has headquarters at Fort Worth, Tex. Born in Springfield, Ark., Berry is 43. He started flying in 1927, operated his own flying service for a number of years and was at one time chief pilot for Hunter Airways, Inc., in the southwest. He joined the CAA in 1938, and is now superintendent of safety regulation in the southwest.

Lester B. Littrell serves Missouri, South Dakota, Nebraska, Colorado, Wyoming, Kansas, and Iowa. Littrell, 43, was born on a farm in Missouri and first flew in 1928 as a Navy trainee at Pensacola. He saw 46 months of service with the Navy, was an A&E mechanic and inspector for airlines in the west. For 10 months he served as a pilot for the San Francisco *Examiner*. He joined CAA in 1940 and was a superintendent in the CPT Program. He has 1,500 hours.

Marshall E. Beeman, serving California, Nevada, Utah and Arizona, has headquarters at 1500 Fourth Street, Santa Monica, Calif. Youngest of the group, Beeman was born in Sioux City, Ia., 38 years ago. He learned to fly in the late '30s, owned and managed the Beeman Flying Service in Los Angeles in 1930-40 and later joined the CPT Program. He has an advanced instructor, flight examiner advanced stages, and secondary instructor's ratings, with more than 2,000 hours of flight time in his book.

Wiley R. Wright, serving Montana, Oregon, Washington, and Idaho, is headquartered in Seattle, Wash. Born in Bowling Green, Ky., Wright is 50. He has been flying since 1917, when he soloed as an Army cadet at Wright Field. He has been in the Army Reserves ever since, serving more than four years in World War II, when he became a lieutenant colonel. In April, 1929, he joined what is now the CAA where he has served in the inspection service and as a CPT superintendent.

Virgil D. Stone, serving Alaska, has headquarters at Anchorage. He is 54 and was born at Buda, Ill. An Army pilot who got his wings during the first World War, he joined the reserves as a buck private in the 120th Observation Squadron, Colorado National Guard, in 1924—10 years later he became the major in command. He was both an instructor and instrument flyer in the National Guard. He has been in Alaska for the CAA since 1941, first as an airport engineer and then, from December, 1942, in charge of all CAA maintenance in the territory.

Bolstering the work of these men is a new policy laid down by Administrator T. P. Wright who said at the spring meeting:

"We intend to back up our private flying specialists with a national campaign for airports and especially small ones; for training and education, including, if possible, some post-war version of the old CPT Program; a reasonable relaxation of regulations—but not much beyond the present rules, safety being an all-important factor—less red tape in enforcing them and closer co-operation with state enforcement agencies; and improvement of private aircraft, especially concerning the noise factor, cross-wind landings, and folding wings."

How the CAA crusade will work out only time will tell. According to Geisse, there should be definite results by fall.

"The program will succeed or fail," said Mr. Geisse recently, "depending on how deeply it reaches into the grassroots regions. Washington is, of course, counting on its field workers to carry the ball but they cannot succeed unless private pilots everywhere co-operate with them and make their opinions felt not only in the field but in Washington."

Implementing the program are a series of meetings being held throughout the summer in all regions, usually under the auspices of some private local aviation group. The meetings are being promoted and attended by CAA's specialists, and those attending are encouraged to voice their opinions on lightplane problems.

"Early reports indicate that the meetings are well attended and successful," Mr. Geisse reported. "We are hopeful that they are signposts pointing toward decentralization of CAA regulation of the private pilot and a new deal for him so far as national policy is concerned."

Supplementing this is a statement from Administrator Wright to the effect that the ultimate goal at CAA is to get as many grassroots people as possible interested in private flying.

"We here in Washington," he concluded, "interested as we are in fulfilling our prediction of 400,000 private planes by 1955, will do everything we can to back up the men in the field and to give prompt attention to sound recommendations from the lightplane pilots themselves."

The consensus at CAA then would seem to be that it is up to the lightplane pilot to keep the ball rolling. END

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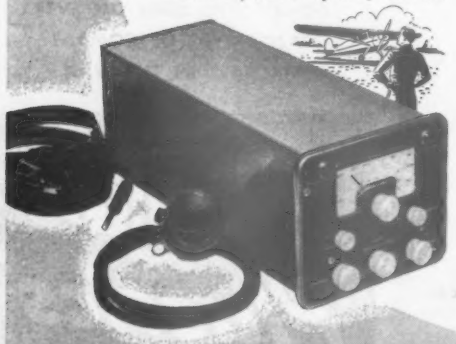

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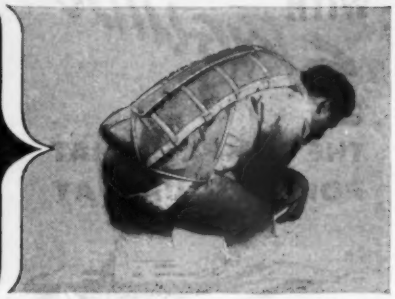

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London Letter

(*Continued from page 58*)

tirely modern civil aircraft to come out since the war. At £14,000 ($56,000) it is attracting buyers from many places. Its lines are good and its tricycle undercarriage and reversible propellers enable it to work from small fields.

Paris Again

Many British aviation concerns are negotiating for booths at the 17th Paris Aero Show which is to be held in the *Grand Palais* in November. It will be the first Paris show since World War II. Aircraft too large to be accommodated in the hall will be shown on the *Esplanade of the Invalides*.

Before the war the Paris show was the meeting place for British aviation's executives, designers, technicians and pilots. Most of them went over and many companies not only took booths in the show but rented apartments in Paris where they entertained their friends.

The French are making a big effort to see that the show has all its old glamor.

People

When John Strachey was made Minister of Food towards the end of May, his place as Parliamentary Under-Secretary of State for Air was taken by 33-year-old Geoffrey de Freitas. De Freitas, who was a barrister and served in the Royal Air Force from 1940 to 1945, has the responsibility for service aviation matters in Britain's House of Commons. Lord Stansgate remains Secretary of State for Air and sits in the House of Lords.

Jet inventor Frank Whittle was upset when the Government ordered him and his co-workers at the state gas turbine research station (formerly Power Jets Ltd.) to concentrate on basic research instead of making new gas turbines. But later he was offered and took the post of "Technical Adviser on Engine Design and Production" to the Controller of Supplies (Air) at the Ministry of Supply.

London Airport's Ministry of Civil Aviation manager is R. C. Pugh who went to Heathrow from Hurn. BOAC manager at Heathrow is G. R. Hawtin. Hawtin joined Imperial Airways (the foundation company for British Overseas Airways) 18 years ago.

Light Prop

The Fairey Aviation Company is branching out increasingly from its main work of supplying the Royal Navy with aircraft. It has always been in the propeller manufacturing field but its variable pitch propeller for personal aircraft is a new departure.

This is for engines of up to 160 h.p. The weight is 38 pounds and the pitch change is mechanically operated. De Havilland was flying an ultra-simple V.P. in a *Moth Minor* before the war.

More Regulations

The only thing nobody in British aviation expects from the Air Navigation (General) Regulations which are soon to be published, and to take the place of all previous regulations on this subject, is simplicity. The new regulations are expected to be another morass of verbiage making flying more difficult. END

"Got any old planes to make back into pots and pans?"

FLYING

See it demonstrated at the National Air Races in Cleveland . . . starting August 30th. Here's a dependable, popular 2-place personal plane that has all the new speed, safety and stamina features. Write for full details about a profitable Comet distributorship in your area!

Cleveland Headquarters
STATLER HOTEL
for duration of races

HOCKADAY COMET MANUFACTURING CO.
BURBANK, CALIFORNIA
DEPT. A

Forgotten Pioneer

(*Continued from page 52*)

ple: spruce for the wing frames and bamboo for the longer pieces which, perhaps, could be called the fuselage. The fabric was muslin.

One night the craft stood completed. Its wing span was about 22 feet. The leading edges were rigid and the wing had a curved profile. The "cockpit" was a bicycle-like saddle mounted on the skid and the sole flight control was a cord leading to the horizontal stabilizer which was fixed to the tail. Montgomery believed that he could control the horizontal direction of his glider by swinging his feet in the slipstream and therefore did not install a rudder.

Before the sun was up the next morning the "flying machine" was loaded on a hay wagon and hauled out to a slope on the Otay Mesa. Jim and John were alone that morning. This was a secret test flight and its success or failure was to be strictly a family matter.

With the sun came a breeze and hastily Jim fastened a rope to the glider and started running down the hill. John climbed into the saddle and, picking up the glider, started running after him down the hill. Then he leaped into the air and was airborne for 603 feet, a distance he determined by pacing it off immediately on landing.

John Montgomery had flown!

For the following three years there was great activity on the Otay Mesa as John flew—and attempted to fly—his machine. A few neighbors were invited to watch and were then sworn to secrecy. Later they broke their vows and their testimony, with photographic evidence, is the basis of John's belated fame.

The first glider crashed and was rebuilt many times. But it was a success. There was a second model which had flat wings and diagonally-hinged ailerons. The inventor here guessed wrong for when its flat wings performed poorly he junked the ailerons which he believed to be at fault. A third model with wings designed like those of a soaring vulture also was a failure.

Montgomery then decided to discover something about the theory of flight. With slanting boards, birds' wings and feathers he tested all types of surfaces in crude wind tunnels. Some of his findings were:

1. Air or water, a fluid in motion, obey the same laws.

2. A properly-curved wing gets lift from pressure beneath but more lift from the suction at the top.

Montgomery's notes still remain showing some of his deductions and observations about flight.

In 1893 Montgomery went to the Aeronautical Congress at Chicago where he read a paper on bird flight. Here he met Octave Chanute and so impressed that famous man of aviation that Chanute offered to come west and work with him in designing further aircraft. Montgomery turned Chanute down, for what reason we shall never know, saying he wanted to continue his experiments alone.

John Montgomery left the ranch on his return to California and turned to teaching and experimenting, ending up on the staff of Santa Clara College (now the University of Santa Clara). Here the Jesuit fathers assigned him supposedly to teaching. But they also gave him a shed for a workshop and free rein to continue his experiments.

Models and full-sized gliders were turned out of that little college shed as Montgomery continued his work. Then, in 1897, he hit upon the idea of tandem-wing gliders. It was a good idea but neither manpower or horsepower were sufficient to give the model the required altitude.

A carnival parachutist, Dan Maloney, then entered the picture. Dan had made many jumps from hot air balloons and he said he would be glad to forsake a parachute for a descent in a glider. With Dan Maloney riding a glider there was to be no secrecy; the public was to watch.

The date was set: April 22, 1905.

A crowd estimated at 15,000 gathered at the Santa Clara college grounds to watch workmen fill the balloon and rig the frail tandem glider. The balloon's bag stretched taut and Maloney climbed aboard for a ride to 4,000 feet where the glider was cut loose.

In 20 minutes Maloney flew an eight-mile course, landed, and then, like Montgomery, disappeared into oblivion.

Six years later Montgomery was still flying his gliders. Then in October, 1911, up on an almost routine flight, Montgomery suffered an attack of vertigo, slumped over the controls, and crashed. He died in his wife's arms.

Thirty-five years later the telegraph wires are sizzling between San Diego and North Carolina. The California Chamber of Commerce has belatedly discovered that the first man to fly a heavier-than-air craft in America was a Californian and they want proper credit.

Hollywood, too, has joined the clamor and the motion picture "Gallant Journey," based on Montgomery's life, has been made and soon will be released.

Since many scenes of Montgomery's gliders in flight had to be filmed, Columbia Pictures ordered 11 gliders based on Montgomery designs. In all, three different models were made. Before the gliders could be built, researchers had to comb the nation for data and material hoarded by Montgomery's friends and relatives. A few photographs gathered from musty albums aided the search.

The Radioplane Company, builders of the radio-controlled Army and Navy target planes (FLYING, March, 1946), contracted to build the Hollywood version of the gliders.

While the film versions had to resemble the Montgomery originals, Radioplane substituted duralumin tubing for wood and airplane fabric for muslin. Other standard lightplane accessories were used where possible and one glider even had a small radio receiver hidden in the wing.

The screen versions also were slightly

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larger in size than their prototypes but were built as much to scale as possible. The 1883 Montgomery glider had an estimated wing span of 22 feet and the Hollywood version 24 feet.

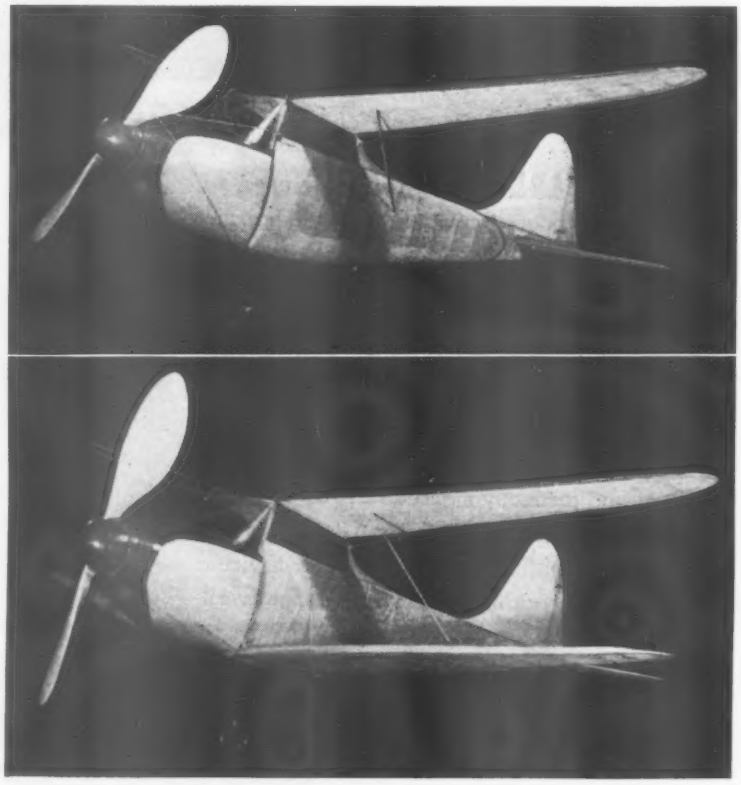
The original glider, dubbed the *Otay Mesa* by Hollywood, had only a horizontal stabilizer for controls. The Radioplane version, however, has a horizontal stabilizer and ailerons similar to the ailerons of today's lightplane. When Montgomery flew his first craft he had a cord attached to the stabilizer to operate it. As conventional controls could not be used obviously, the 1946 model has a control stick which is strapped to the pilot's back. The pilot controls flight by swaying his body from side to side.

When Don C. Stevens took the *Otay Mesa* out for its test flight he crashed after take-off when a wing crumpled. Injured in the crash, Stevens was replaced by Paul Tuntland, a 24-year-old glider pilot who flew another *Otay Mesa* in subsequent flights for the movie makers.

In the 1905 version of a Montgomery glider, the wing warping control technique of the original was replaced by ailerons. Pilot control was by the same stick-strapped-to-the-back method used in the 1883 model in which Montgomery was the first man to fly.

The 1911 glider in which Montgomery died had a butterfly control wheel for warping the wing and adjusting the horizontal stabilizer. It was an easy step for the Hollywood technicians to convert this control over into a conventional control wheel.

Before the cameras started rolling on the aerial scenes, Tuntland had become an accomplished pilot on Montgomery's planes. Here and there the pilot and technicians pointed out flaws in the 1946-built models and minor improvements were made. But, over 60 years after Montgomery made America's first heavier-than-air flight, his designs again flew—and basically they were the same designs with which he pioneered. END



RETRACTING WING

NOW you see it, now you don't! That's an apt description for the lower wing of a proposed experimental plane designed by Nicholas J. Medvedeff and Chester U. Palmer who suggest an airplane with a lower wing which retracts into the fuselage. At slow speeds both wings would be extended, to obtain the lowest speeds and lowest wing loadings possible. At high speeds, with the lower wing retracted, the erstwhile biplane would become a monoplane, thus reducing drag and allowing more efficient high speed operation. The inventors call their creation the *Monobiplane*. Still strictly experimental, it has been built, so far, only in miniature. Wind-tunnel tests have been "highly satisfactory."

New VARI-COOLED opposed engines by Jacobs

Jacobs, builder of workhorse radial engines for two decades, announces four new opposed engines:

O-240A, 4 cyl., 100 hp, air cooled
O-240L, 4 cyl., 100 hp, liquid cooled
O-360A, 6 cyl., 165 hp, air cooled
O-360L, 6 cyl., 165 hp, liquid cooled

THE FLAT SILHOUETTE with small frontal area fits snugly into narrow nose or shallow wing nacelles.

THE EXTENDED NOSE CASE allows better streamlining, more efficient propeller operation.

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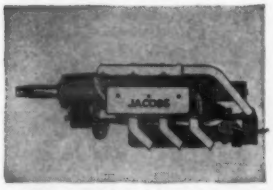
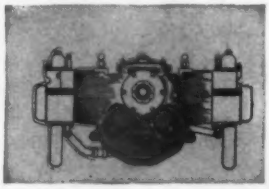
For the aircraft designer and manufacturer, these four new Jacobs opposed engines allow advances in small plane design not feasible with existing power plants. See them at the

Cleveland Show... November 15-24

Jacobs Aircraft Engine Company, Division of Republic Industries, Inc.



Side view of liquid cooled, model O-360L, shows compact design and extended nose case which fits snugly into fuselage, nacelle or wing.



All models have two magnetos mounted on forward end, making possible a smaller, more compact accessory section on rear case.

JACOBS • **Pottstown, Pa.**

Division of Republic Industries, Inc.

How to Fly Faster Than Sound

(*Continued from page 30*)

are in development. Ceramic coatings of the blades are being experimented with. Means of cooling the blades also have been suggested.

Perhaps still more promising in the long run is the ram jet engine, containing no moving parts. The ram jet is nothing more than a flying tube. Air comes in at one end, is mixed with fuel, ignited, expands greatly, and passes out the jet orifice in the rear at great speed. In essence, the ram jet works on the same principle as the now-conventional turbo-jet engine—except that it relies upon its speed to compress the air, instead of requiring a turbo-compressor to do that job. But since it has no turbo-compressor, it must first of all have that all-important speed. So it has to be launched by some auxiliary power means—rockets, piston engines, or perhaps small turbo-jet engines.

Engineers seem to agree on this: propellers can never power supersonic craft. Even if gas turbines or engines could be built powerful enough, the speed of the propeller itself is the critical limiting factor. Propellers are subject to the same compressibility problems and shock as are the plane and the wing. However, propellers do seem capable of taking planes up to the sonic barrier. Although 500 m.p.h. was formerly considered the limit in propeller-driven craft, new propeller designs recently have raised that to well above 600 m.p.h.

Then there's the question of payload. Thin, sharp-edged wings and fuselages are necessary for supersonic flight. Where are you going to store fuel? The problem is compounded because, with power requirements increased ten-fold, so are fuel requirements. And you have less space to store it in. This is an even more critical problem when commercial use of supersonic planes is considered. Just as there is very little room for fuel, there is very little room for passengers, cargo, pilots, explosives, armament. But of course the same problem faced the Wright Brothers when they first flew. They could carry very little payload. And maybe both ideas were in about the same stage of development—the Wright Brothers in 1903, supersonic flight in 1946.

Landing is likely to be difficult, too. If you are going to use thin wings, without too much lift, you have to land hot. One idea—that of extendable wings—is suggested as a solution. Other solutions are suggested: variable camber, leading-edge wing flaps, slats, boundary-layer removal, low aspect ratios.

Another strange problem is heat by air friction. Pilots in conventional planes are accustomed to being cold when they fly high. But at supersonic speeds, planes go so fast they heat up. V-2's falling upon Britain were reported to have been heated red-hot or white-hot in their brief 12-minute trip. We know, too, that meteorites entering the earth's atmosphere get so hot that most of them burn up before they reach the ground.

Heating is definitely a problem, then, and one that may be most difficult to solve. As you know, when gases are compressed, they get hot. So heating would be especially serious at the leading edges of fuselage and wings. The air there would be compressed, and very hot. Besides the difficulty of cooling the cabin to bearable temperatures, the hot temperatures would weaken the metal alloys of which the plane is made.

The ten-fold increase in power needed to drive the supersonic plane means a parallel increase in structural strength. Wings must be thinner, but also beefed up. That's not easy. Skin is heavier. The whole structure is much stronger Obtaining strength enough is an especially serious problem in wing design. The buffeting in transonic speed zones is apt to be especially damaging to aircraft structures.

Research facilities are notoriously inadequate. It is almost as hard to get air going fast enough in wind tunnels as it is to get planes going fast enough outside them. But preliminary research indicates that large stability and trim changes will occur in passing through the transonic region.

The idea, then, is to get through the transonic zone as fast as possible. The highest possible accelerations will be used until the plane is going faster than sound. After that, maybe, the going will be fairly smooth again. Rocket boosters have been suggested to supply the acceleration to take the plane through the transonic region. Then, presumably, our turbo-jet or ram-jet engine would carry us on.

It also has been suggested that planes might dive through the transonic barrier. But the ground comes up very fast and a good many pilots have lost control of their planes in inadvertent dives at considerably lower speeds than those we must achieve.

Accompanying wing planform drawings indicate what shape a supersonic wing might take. They might be sharply swept forward (not illustrated) or sharply swept back. NACA has done theoretical research to indicate that to cross the transonic zone, a sweepback of 65° is needed, and to fly more than 2,000 m.p.h., a sweepback of 72½° is necessary. Sweepback of about 45° is considered the minimum for any effective result.

Both flap and aileron effectiveness decrease markedly with increased sweepback. With only 45° sweepback and 100 m.p.h. landing speeds, the sinking speed is about 50 feet per second, which is twice the rate safely handled by experienced pilots.

What does this mean? Well, for one thing it means much higher landing speeds. One hundred m.p.h. is too slow. Speeds will have to be 150 m.p.h. and up. The airport is getting more like a target every day. END

CONTACT!
All set for that flying-hunting trip in two new jackets by Aero-Wear! "The Comet" (right) in Zelanized, wind-resistant, Mountain Cloth with Laskin lamb collar and timmi-tuft alpaca lining; "The Jet" (left) a multi-layer jacket, also Zelanized, with zip-out timmi lining and special computer pocket.
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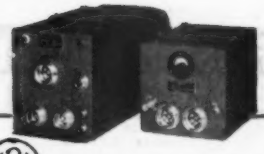

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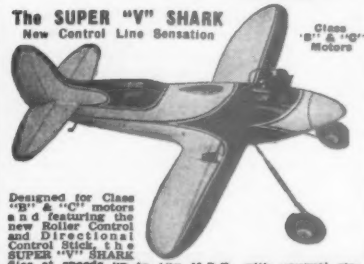

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Descriptive Literature 5c

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Report From Washington

(*Continued from page 51*)

horse took the automobile—if he'll give it a chance," says J. B. Hartranft, Jr., executive head of the Aircraft Owners and Pilots Association, adding: "It may be that, since he seems not too familiar with aviation, Mr. Drury has confused the roar of a transport with the comparative quiet of a lightplane." . . . CAA is still chill to the Drury suggestions, regardless of compromise, on the grounds that huge areas of air space will be involved and policing will be virtually impossible task to manage, without a vast increase in personnel and equipment.

Park-Travel Tips

All in all, it probably boils down to a bureaucratic argument which, as the years go by, the airplane will win. But in the meantime, don't say we didn't warn you. You are within CAA regulations if, for instance, you land on a park lake; but what an irate park patroller might do if he caught up with you is anybody's guess. . . . On the other hand, an exception to the ban on water landings may be found at Isle Royale National Park, Mich. Lightplaners have been landing and taking off there for some time. . . . Here's another interesting item: Olympic National, in Washington state, was visited early in the summer by Secretary of the Interior J. A. Krug and a party, and *he* flew over it going and coming, sometimes pretty close to the ground. Didn't get pinched, either. . . . Once inside the parks, you are likely this summer to find a lot of unrestricted automobile and train tourists ahead of you in what promises to be one of the biggest seasons of all time. If you should decide to pay a visit and park your plane at a nearby outside field, be sure to make reservations in advance through your nearest tourist agency. . . . And drop us a postcard, letting us know how you make out. You can even use airmail if you like —we won't tell Mr. Drury on you.

Airports

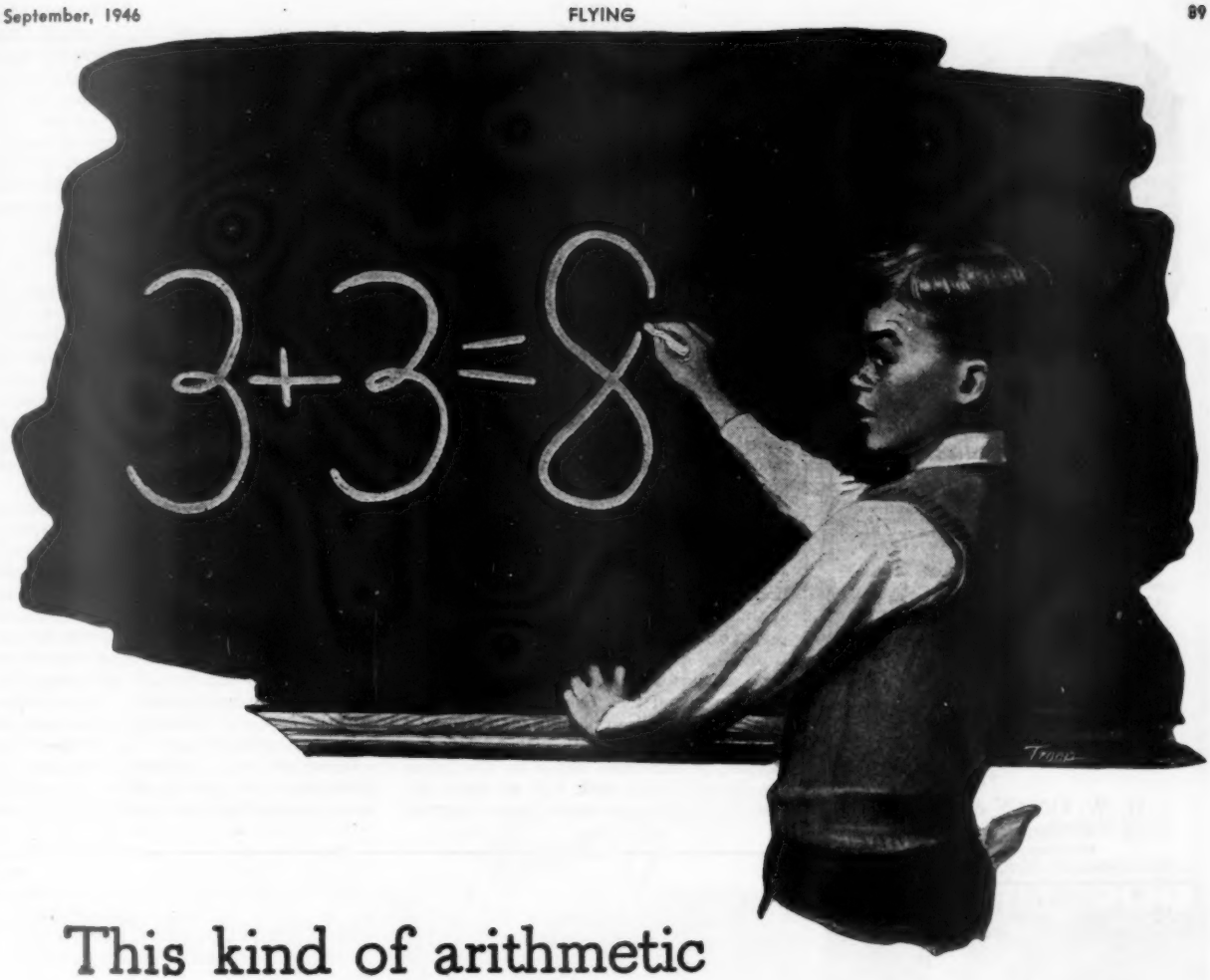
It will be next spring before the half-billion-dollar CAA airport program gets under way for the simple reason that it takes a long wind-up before you begin pitching that kind of dough around. Preliminary applications for Government funds may be submitted about October 1, following a nation-wide survey of airport needs. If you do apply, don't forget that under a formula outlined in the airport act, your local government must match the funds supplied by CAA. . . . According to Charles B. Donaldson, CAA assistant administrator for airports, the program will be decentralized as much as possible, with district offices established on an average of one per state. Administration of all work in each of these districts will be delegated to the local offices. . . . Another thing that might be added—the formula by which money was allotted by states looks, from the way the figures turned out, a little cock-eyed. Texas, sixth in population, for instance, got first in appropriations. The CAA explanation of this is that money is being distributed according to population and area. A total of 75 per cent of the funds will be so allotted. The remaining 25 per cent will be used by the Administrator to take care of areas that are as short of airports as they are of population and area.

Noise "Nuisance"

Biggest difficulty on the airport program agenda seems to be local opposition to placing small ports near residential communities. Troubles have already been encountered at widespread points in the nation and CAA is so concerned about the problem that preparations are being made to back local airport enthusiasts with expert testimony proving that lightplanes don't make much noise, and even

"It'll revolutionize the business!"

FLYING



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So keep on buying Savings Bonds—available at banks and post offices. Or the way that millions have found easiest and surest—through Payroll Savings. Hold on to all you've bought.

You'll be mighty glad you did . . . 10 years from now!

SAVE THE EASY WAY... BUY YOUR BONDS THROUGH PAYROLL SAVINGS

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that you get used to it if you hear it regularly. Such testimony was introduced effectively into a Philadelphia court case recently against a neighborhood airport in the Main Line area. George Piqman, CAA noise expert, testified that a putt-putt made a little more noise than an automobile, less than a truck. . . . Even more emphatic was the ruling handed down on a field in Coral Cables, Miami suburb, in which the Florida State Supreme Court okayed its operation and added that in the Court's opinion airplanes not only are here to stay but "the establishment of airports to accommodate them should be encouraged." . . . John Geisse of CAA, spearheading the campaign for small ports, also advocates preventive measures toward keeping the noise issue out of court. Neighbors of a port should be pre-sold on flying and noise will automatically disappear as an objection, he contends. . . .

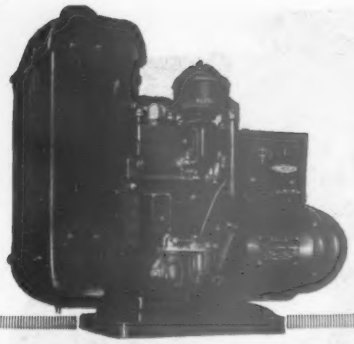
Ghost Story

One of our best agents tells of an airline hostess friend of his, and a brave girl at that, who opened the door to the cockpit on a recent flight in response to a ring from the pilots—and promptly fainted dead away. The pilots had disappeared and the wheel was being gently joggled by a pair of disembodied white hands! . . . It turns out that this was a joke, son, devised in elaborate detail by the pilots concerned. They took two of those accordion-like oxygen mask tubes, inserted smaller tubes inside them, stuck the smaller tubes into the slipstream, and tied a pair of 15 cent cotton gloves on the cockpit end of the oxygen tubes. Wind from the slipstream inflated the gloves, making them look full of hands. The boys then tied the gloves to the wheel, put the plane on autopilot, rang for the hostess, and hid in the baggage compartment.

Briefings

To make flying safer, AOPA recently contributed $1,000 for research into personal aircraft injuries at Cornell University under Hugh De Haven. Aircraft interests and Army and Navy are also backing the work, aimed at discovering, among other things, the collapse characteristics of airframes, head injuries in cockpits, and safety belt webbings and attachments.

CAA experts believe that the recent Curtis Publishing Co. survey of national aviation futures is conservative in the lightplane field. The survey showed that Mr. Average Man is cock-eyed in his ideas on the cost and upkeep of planes and therefore will not buy when he gets real facts. CAA believes that this is true but that two big factors will bring the plane to the mass market—reduced manufacturing costs, lowering prices and upkeep expenses, and shoot-the-works enthusiasm among youthful aviation enthusiasts, who are going to fly even if they have to hock the family jalopy. END



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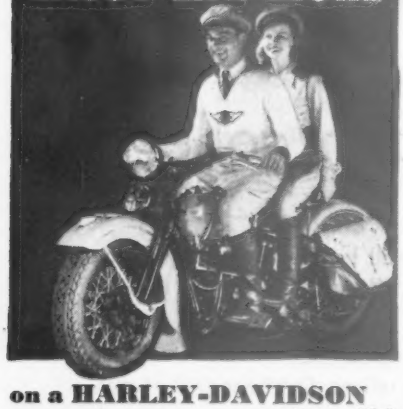

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AIR CORPS SONGMAN

MAJ. ROBERT CRAWFORD, the Alaskan who wrote the "Army Air Corps" song, has been a pilot since 1927. He still holds license No. 6688. Called to the AAF when they were seeking service pilots, the composer-flyer was a ferry pilot on heavy aircraft. In addition to his Air Corps song, Crawford has written "Mechs of the Air Corps" for the mechanics and "Born to the Sky" for the Air Transport Command.

Crawford was considering opening a string of "Airtels" across the United States following his release from military duty. He plans building cabins along airstrips where pilots can land, have their planes serviced and sleep and eat while flying cross-country.

I Learned About Flying From That!

(*Continued from page 54*)

we had passed over the range station at 9,000 feet and were shuttling back and forth on the south leg in the snow storm. It soon became impossible even to watch the progress of the rime ice as it built up on the cowlings, leading edges and antenna.

The radio compass was chasing itself around the dial like a dog after his own tail while the snow static and antenna ice combined to make all but the VHF receiver unreadable. By manually revolving the loop after each change of heading, I was able to hear the faint squawkings of the range station. It was in this manner that I managed to maintain our precarious position along the legs of the range.

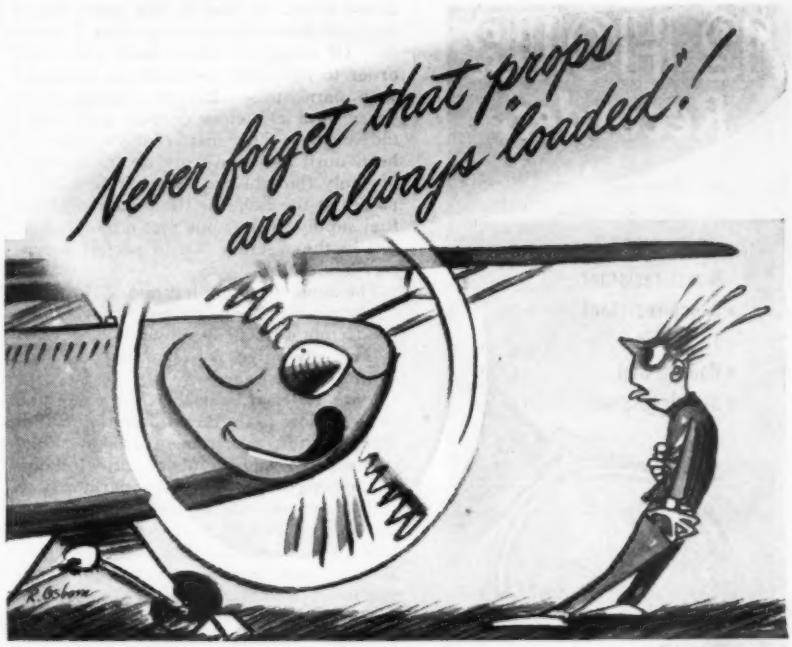
The Atsugi tower broke in on my troubles only to give me more. All the alternates were below minimum except Iwo Jima. They had been unable to get any information about the weather at that little island. The tower operator also relayed the message that GCA was alerted and standing by. This information meant nothing to me. I had a vague recollection of reading something about the marvels of Ground Control Approach but had it been hopelessly confused with a sequence from a second-rate movie where some character with a microphone had ventured out in the rain to "talk" an airplane into a safe landing. I wasn't about to get myself involved in any such melodramatic situation.

Unfortunately, I was still of the opinion that the pilot was the only one who could get himself out of a jam in flight. If he couldn't, no one else could and it was silly to clutter his mind with well-meant but irrelevant information from the ground. This was, of course, an unreasonable attitude and my decision to attempt a standard range letdown could have been fatal.

I reviewed for the hundredth time what I intended to do. The minimum safe altitude for an instrument approach to Atsugi is 500 feet; just 400 more than the reported ceiling. It was my intention to go that far below the minimum and attempt to find the runway in spite of the restricted visibility. As we passed the station at 1,000 feet, I reduced power to give a 600-foot-per-minute rate of descent. The radio altimeter was set for 100 feet and I had computed the exact time to the field. The navigator was stationed in the plastic nose to watch for the runway—or, more important, an obstruction.

The rain at the lower altitude had melted the accumulated snow on the windshield. McMahon was sitting on the edge of his seat with his nose plastered against the windshield. The yellow and then red light on the radio altimeter flashed the warning that we were down to 100 feet. There was not even a glow in the darkness to indicate our position in relation to the field.

I pulled up at full throttle, climbing away from the hills that I knew were



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ahead of us. It was at this point that I realized there was nothing more I could do. Of course, I could have given the order to jump, for we were all equipped with parachutes. But the habits of 10 years as a chuteless civilian pilot were too strong. The idea didn't enter my head until after we were on the ground. My only thought was to continue making passes at the field for the duration of the fuel supply in the hope that a momentary lull in the weather would permit a contact landing.

The tower was calling me:

"Army 3411, you are not, repeat, *not*, to attempt further let-downs. The GCA is now operative and waiting for your call on 'B' channel."

I was to learn later that our plane had come so close to the Administration Building that the operations personnel had stampeded out of the doors and windows.

The voice of the GCA operator was clear and cool. After the initial contact he commentated, "I have you in view five miles south of the field at 2,000 feet. Maintain your present altitude and turn to a magnetic heading of 355°." The calm authority of his voice and the explicit directions worked wonders on the morale of all of us equipped with earphones. Here was a team of men at the controls of a Rube Goldberg affair on the ground who could actually see us floundering around in that Japanese snow storm.

I answered him immediately and the cheerful tone of my own voice surprised me. At this point the controller called for information peculiar to the performance of the *Flying Fortress*. I was quick to give him the little information he needed to make that wonderful machine of his come up with the right answers. I was converted.

The rest of the approach and ultimate landing instructions were given with the same calm sureness that had characterized the initial contact. The psychology of the controller's approach was a masterpiece of tact and understanding. The phrase, "I have you in view," was used frequently and all instructions were given in the jargon of the airman. I was never conscious of the fact that a non-pilot was directing me.

Following instructions, I turned to the final approach heading and reduced power for the descent.

The Master Controller then took over by announcing himself, "This is the voice of the Master Controller. You will not acknowledge instructions by voice from this time until landing. Simply follow my instructions."

It was in this manner that the approach continued; the controller giving brief instructions—and I doing my best to follow them.

"Turn 3° right and hold 359°, you are 50 feet too high," the controller quietly announced.

Then, almost immediately, "You are one and a half miles from the station at the correct heading and altitude. Continue your controlled descent."

There was mounting agitation in the cockpit as the altimeter unwound. Jim McMahon was once again on the edge of his seat. Every few seconds he would duck his head and call out the altitude. As we approached the 50-foot mark the red light flashed a steady warning. Almost simultaneously the voice said, "You are contact, you are contact. Take over and land your plane." I just had time to carry out this last, most important command. The runway lights were directly ahead of me and only a few feet below. I cut the power, pulled hard back and felt the wheels make contact.

To say that I learned about flying from that experience would be putting it mildly. Fourteen people had entrusted their lives to the abilities of a pilot but ended up owing those lives to the science of applied electronics. END

"AND THERE I WAS..."

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IT WAS hard for Army pilots training in Florida to gain the sympathy and understanding of swamp country natives. One pilot tells of an emergency landing on a highway. In the process of stopping his plane, the pilot watched both wings shear off as they struck trees lining the road. Then, as the plane dived off the road and nosed over in the swamp, the pilot got a nasty cut on his forehead. Looking like a high-priority ambulance case, the pilot painfully climbed from the wreckage.

A Model T came chugging down the road, slowed, then stopped. From it climbed a native in overalls who carefully closed the door of his jalopy and took a couple steps toward the pilot and the wreck. He paused, looked the situation over and then turned back, but then his humanity got the better of him and he walked over to the pilot.

"Howdy, bub," he said, "having any trouble?" —Arthur J. Clawson

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Converted Aces

(*Continued from page 46*)

usually comes first. It's the same old basic and elementary three R's of flying: navigation, meteorology, CAR. Sure, the service pilots have been all over that, but this time it's learned again with a new emphasis.

Take meteorology, for instance. To harassed service pilots, clouds often meant a welcome haven when the *flak* or intercepters got too hot. None of that now, fellow. No more dodging in and out of the fleece. It's against CAR under some conditions, and besides it's too rough and bumpy on the passengers.

Navigation: that used to mean getting from one point to another, with or without the aid of a trained navigator. Any route within 50 miles of the course was satisfactory just as long as the goal was reached. In airline flying, departure point and destination are equally important but there is a tried and carefully-charted course to follow, with radio ranges, check points and fixes that must be passed over and reported from.

Radio? Just ride up and down the airways, especially in instrument weather, and listen to the various service planes getting all fouled up on their procedure because of faulty radio technique. Regardless of who is to blame, airlines' trainees learn their radio procedures all over again.

By the time this point in their training has been reached, several candidates probably have washed themselves out. Those who remain do so because, like Gus Connery, they have begun to learn the meaning of the word *humble*. Or sum up the whole business from another angle and call it *attitude*.

Now in mufti, they find their financial props have been somewhat shaken. From roughly $300 and up each month they are reduced to maybe $220. Add to their financial worries the feeling that they are being treated like dumb cadets again. They, who have flown equipment so hot these old mail airline pilots would be afraid to sit in it! And they are no longer officers . . . All this the young pilots have got to get over or they can't stay in airline training.

If the young pilots have survived these mental hazards and have come successfully through orientation and ground school they are ready to start flying. Usually they get from eight to 10 hours of instruction and practice. They concentrate on instrument approaches, take-offs, landings and general air work.

More than likely the instructor is an old-timer who was flying before his student was born. He's precise, set in his ways, maybe, and he expects a lot of "savvy." When he calls for 27.2 inches of boost it had better be just that. It's the same with r.p.m.'s, altitude, airspeed. No more banging the throttles against the stop and waiting for something to happen.

About this time everything in training looks black. Students realize that, even if all goes well, they've got ahead of them two or more years of sitting in the right hand seat. How can they stand being treated like dumbbells that long? Why, in the service they checked out as first pilots in five or six weeks.

They had better forget this line of thought. Once they do finish training and start out on the line the going isn't half bad.

Oh, there still will be gripes. Their living scale will need a little paring down but how much were they making in civilian life, before Uncle Sam trained them to fly? A few new men also feel the pay scale is a bit out of balance. The chap in the left-hand seat is collecting most of the money for flying this plane.

Maybe that's unfair, maybe not. But remember that once he went through the same thing, except that in his day the salary was less and the time required to check out as a captain was longer. On top of all this he probably put a lot of his own hard-earned money into learning how to fly. When the balance is struck, the ex-service pilot is still likely to be $50,000 or $60,000 ahead of him. END

FLYING

"Felt like the bottom dropped out of my stomach on that last spin."

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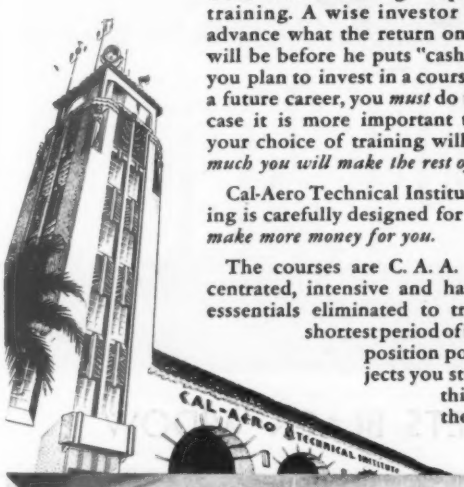

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Flying Is Cheap in Waukegan

(*Continued from page 37*)

inventory the whole program to see how he came out. One thing he will know for sure: How do pilots respond to genuinely reasonable flying rates?

Carpenter opened the club to applications on February 8. The 100th member signed up March 13. By the end of June he had 200 members. He anticipates 250 before the summer is out. He can handle them easily; his Waukegan Air Service has 26 planes for rent, making it one of the largest operations of its kind in the country.

The members understand and Carpenter makes no pretense about the fact that it is his club and that he is running it. The members feel he has made it so attractive that they have nothing to complain about—at least so far. And though it is an operator's club, they find it already gravitating naturally into its own social functions and activities. Members are now making Sunday breakfast flights to nearby cities and are scheduling monthly overnight flights.

Annual membership fee is $25. This money was held in escrow until Carpenter had the guaranteed 100 members he felt were the minimum necessary.

In addition to paying their membership fees, members purchase a $10 flight card each month. This card entitles them to $10 worth of flying during that *current* month at the low club rates. The flight card must be purchased by the 10th of the current month. If purchased after the 10th, a fee of $1 is charged and if a member is 30 days in arrears, "unless for a very good reason," his membership fee and all club rights are forefeited, nor can he rejoin the club at any time.

Members are required to observe Civil Air Regulations strictly and follow the local field rules. Violators are asked to resign their memberships, and receive a pro-rata return of their membership fee. High school students and others who have not reached their 17th birthday may join

PIGEON MEETS BLACK WIDOW

SOMEWHERE in California a pigeon is alive despite a run-in with a Northrop *Black Widow* which was boring in on a single-engined test run one day recently when the pigeon flushed directly in its path. Neither pilot nor photographer knew he was there until they saw him on the finished photo print, but Margo Draper, a Northrop flight line employee, rushed out to pick up the stunned bird, which finally flew away after a series of tentative test hops along the runway. Northrop test pilots believe this is the same pigeon they had tamed by feeding peanuts near their quarters. The tame pigeon hasn't been seen since. Probably figured that test flying is too dangerous. . . .

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for a $10 membership fee and purchase of a $5 monthly flight card. If membership should drop below 100, Carpenter guarantees to continue the remaining members at the same rates for the balance of the year.

Members have many privileges. They can fly as much as they want during the month for the same low hourly rates. They receive special 10 per cent discounts on all personal supplies purchased at the airport, including gasoline for their automobiles. And they will not be restricted to airport flying; they can take off cross-country at the same rates (for an agreed minimum number of hours) when they have been checked out to do so.

Part of Carpenter's reasoning, on that foggy January day when he worked out the broad details of his club plan, grew out of his study of past students. He had sold a flying course guaranteeing to solo students for $80. "But we found we lost a good many of these students after they had soloed because they discovered they couldn't afford to keep on flying," he explains. "We have found that 75 per cent of our people who give up flying, drop out because of the excessively high cost.

"If we can't keep the customers we already have, how are we gonna get new ones?"

His answer is to make it so reasonable that they can hardly afford not to fly.

That's fine for the club members, but how is it going to affect the Waukegan Air Service? The crux of the matter, as Carpenter sees it, is volume. "Our only hope of making the plan pay off," he says, "is greatly increased business. We are already getting back people who gave up flying because of the cost, and we find that new students join up who previously had held back for the same reason.

It's too early to say for sure, but Carpenter already sees indications of a vastly increased volume. Although the plan did not start officially until May 1, he has allowed early club members to fly at the new low rates and on one warm day of early spring did the largest volume, both in cash and in hours, of any previous day in his eight years of operation.

Not all of Waukegan Air Service's customers are taking to the new plan. Forty pilots who flew last year have not joined up, preferring to take their chances on the regular rates. On the other hand, one group of four pilots who had a *Cub* sold it and joined his club because they felt they would be able to fly cheaper in the long run, though it was only costing them $2 per hour to operate their plane (this figure, of course, does not include depreciation and insurance).

Customers can use the Waukegan airport in five different ways: by joining Carpenter's club, by forming their own club, by renting planes at regular rates, by storing their own personal planes there, or as transients. All itinerant flyers are greeted warmly and treated courteously. They may store their plane under a roof for $1.25 per night, or tie it down outside free. All airport customers and itinerants have free use of a courtesy car that makes a round trip into Waukegan, completely touring the city every two hours and picking up and discharging passengers.

Besides his club and plane rentals, Carpenter has a substantial fixed-base operation. He has nine shop employees, including three A&E mechanics, and does shop work for a number of other fixed-base operators—stressing sales and service on Piper *Cubs*. He has two office girls, three full-time instructors besides himself, and a full-time man running his parts department, which sells parts for two types of aircraft on a distributor tie-up over 52 counties. He also has dealer franchises for Piper, Fairchild and Stinson.

During the eight years he has been operating at Waukegan, Carpenter has never had a serious accident on his airport. He feels that is the highest recommendation he could possibly have. It has paid off, too, not only in savings on repair bills and plane damages, and in getting him a much lower rate from the insurance companies, but in building good will.

"It's been hard during the war to expand the way we wanted to," Carpenter admits. "We haven't been able to get materials, and we're just now installing inside toilets and a ladies' club room. We're doing our best to make the place presentable, but we have all the difficulties which beset anybody who is trying to run a park in connection with his business—which is what an airport is, or ought to be."

Whatever the coming year holds, Carpenter promises it will be interesting. He is keeping an individual card record on each club member, comparing the amount of time the member flies with what non-members fly, and with what the same customer flew last year as a non-member. He will have records of peak and low flying periods. He will know why each member joined or left the plan. He will also have complete records of total hours flown compared with previous years, and total costs of operation and income. He will know at the end of the year whether he is making money on the deal; but doesn't think he will know before the receipts and expenditures of the entire year are summarized.

"Meanwhile, the student has nothing to lose—we're taking all the risk," he points out. "Maybe I'll end up by being the biggest laughing stock in the middle west. A year from now I'll let you know." END

Regular vs. Club Rates at Waukegan Airport

Type Plane	H.P.	Regular Rate Per Hour	Club Rate Per Hour
Piper J3 Trainer	50	$ 7.00	$ 3.50
Piper J3 Trainer	60	7.00	4.00
Piper J3 Trainer	65	7.00	4.00
Piper J5 Cruiser	75	8.00	4.50
Taylorcraft, side by side	65	7.00	4.00
Aeronca Tandem	65	7.00	4.00
Monocoupe	90	9.00	5.00
Boeing Kaydet	220	12.00	8.00
Stinson Voyager	80	8.00	4.50
Ercoupe	65	8.00	5.00
Piper Super Cruiser	104	9.00	5.00
Stinson "150" Voyager	150	12.00	8.00
Fairchild Cornell	175	18.00	10.00
Piper J3 Trainer (floats)	65	9.00	5.00
Instructor time		3.00	2.00
Parachute rental		1.00	Free

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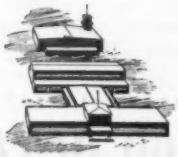

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Letters

(*Continued from page 8*)

in the Air Training Corps R.N.Z.A.F. All recognition material is now almost unobtainable so I would greatly appreciate receiving any old recognition journals and/or publications of any sort or date.

ALLAN R. LOVE
Sefton
North Canterbury, New Zealand

WRONG SYMBOL

In the June issue of FLYING there was a station model on page 37 that, in my opinion, has the wrong symbol for "present weather." Right below, under precipitation the symbol for light hail is the same as you have in the station for light steady drizzle.

W. G. STACEY
Cincinnati, O.

● This article was based on the Navy booklet "Flying the Weather Map." Believing the Navy infallable, we didn't check on the illustrations. So we're both to blame.—ED.

CLIPPER SAGA

In "Pacific Rescue" (FLYING, April, 1946), I believe Commander Yambert has incorrectly listed the Boeing *Clipper* as a 25-ton flying boat. As I recall, this type aircraft was certificated to gross at 84,000 pounds (42 tons) for commercial use in 1939. Perhaps the commander had in mind the Navy's PB2Y-3 which was being flown transpacific at about 58,000 pounds, or 29 tons.

On page 86 of this same article, it stated that the *Honolulu Clipper* was the first Pan American World Airways plane to go down with passengers in an open sea. How about the old *Hawaii Clipper* back in 1937? It seems to me that this plane failed to show up at Manila on a routine flight from Guam with a few passengers aboard. The captain's name was Terletzky, or Terletski. If you have any later dope on this accident, or disappearance, will you kindly pass it along?

HAROLD G. LAMBERT
Baltimore, Md.

●Reader Lambert is right about the Boeing *Clipper*. It was certificated to gross at 42 tons. The *Honolulu Clipper*, however, was the first Pan American plane to go down safely. The *Hawaii Clipper* disappeared.

The Civil Aeronautics Authority report on this disappearance stated that the captain's name was Leo Terletzky and that between 0411 and 0412 G.C.T. on July 29, 1938, there was a failure of communication between the ground and the *Clipper;* that communication was not thereafter reestablished; and that no trace of the aircraft has since been discovered.—ED.

EMERGENCY RATIONS

After reading C. J. Tippett's article "Tips on Touring South America," I think he has an excellent suggestion for all flyers, that is, that they carry as part of their equipment a set of Army emergency rations.

Could you advise me where these rations might be obtained?

VETA WILSON
Rifle, Colo.

● The Civil Aeronautics Administration, Commerce Building, Washington 4, D. C., can supply that information.—ED.

COURTESY MEANS SAFETY

Just recently I came across a copy of FLYING (May, 1946) in which I read with much appreciation Mr. Shanklin's timely article on courtesy in the air.

There were few breaches of good manners during the war even in bomber command where the number of aircraft on the circuit, bad weather and frayed nerves were conducive to such reaction. But, despite the fact that when such breaches did occur the sequel was usually a fatal accident, I have witnessed increasing examples of pilot arrogance since the cessation of hostilities. One such case occurred just the other day.

I had just entered the landing pattern when a *York* captain taxied his plane out. Instead of waiting on the perimeter track he taxied onto the runway before running up the four engines and checking the instruments. His action forced me to orbit for over 10 minutes before I could land.

This is just one of the many incidents I've noted of late. Unless something is done to promote better manners among all pilots—regardless of their company, air force or nationality—some nasty crackups are going to start cropping up at the various air termini throughout the world.

F/LT. M. R. LOVELL, D.F.C.
Squadron 78, RAF
Middle East

YOU SHOULD SEE OUR MAPS

I've heard the war has caused many changes, but when did Vermont become New Hampshire, and vice versa? I am referring to the map by Hal Morris on page 28 of the June issue of FLYING.

ROBERTA PLASTERER
Fort Wayne, Ind.

● Our faces are almost as red as the one Hal Morris is wearing.—ED.

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